
recursos naturales e infraestructura

Mining in Latin America in the late 1990s

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Abstract

The purpose of this report is to analyse the factors that have determined the flow of investments in mining operations in Latin America and to evaluate the extent of such investments in the 1990s. This period is in clear contrast both with the 1970s, when investments were buoyant owing to nationalization and new projects that boosted State participation in mining operations, and with the 1980s, when investment flows were sluggish.

The surge in investments in the 1990s was part of the general trend towards economic liberalization and elimination of barriers to foreign capital inflows, modernization of regulations governing mining concessions, more secure mining rights, and technological changes that took place in the last few decades.

The first section examines investment flows into the mining sector in the light of changes in the composition of external financing in the 1990s, which resulted in a greater participation of foreign direct investment in the external funding mix, a trend favoured also by inflows of privatization capital and which was reflected in a significant increase in net capital transfers to countries in the region.

The second and third sections catalogue the main changes noted in the treatment of foreign direct investment and in the mining legislation of countries in the region, revealing a similarity between existing proposals for reform with respect to the promotion of private investment and the reduction of the State's role in the development of the mining sector.

The fourth section contains a review of changes in trade and tax regimes and a comparison of the impact of taxation on investment decisions. Emphasis is placed on the effect of taxes on fixed and variable costs and on rates of return, which reveals the differences between the taxation systems applied in the region.

The more favourable environment for foreign investment and the elimination of barriers to entry to the mining sector opened up a new phase in terms of foreign capital attraction in the 1990s. The policies adopted by countries in the region were instrumental in stimulating mining investments, and these and other factors are analysed in the fifth section.

Following the analysis of the determinants of investment and based on the conclusion that public policies had functioned in a positive way in the nineties, the sixth section covers the variation in projected exploration costs of mining operators, the effective value of actual investments and the investment projections at the start of the new millennium.

I. Variations in foreign capital inflows

Foreign financial inflows into Latin America showed marked variations in recent decades, in terms of total amount as well as composition (loans or direct investment). From the end of the Second World War until the mid-1970s, loans from official or multilateral sources and foreign direct investment (FDI) accounted for most inflows. FDI inflows were directed basically towards the exploitation of natural resources and the substitution of industrial imports in extremely protected markets.

Since the 1970s, an important change took place at two levels. On the one hand, foreign investment in the development of natural resources lost momentum, following nationalization of foreign companies and the imposition of barriers to entry in many countries of the region and, on the other, in that period, foreign debt was contracted on a massive scale mainly for financing of public investment projects.

The recycling of petro-dollars, changes in the international financing system and the slowdown in growth in some developed economies increased the amount of credit made available to countries of the region by the private banking system. This trend ended with the foreign debt crisis that loomed in the first half of the 1980s.

During this decade, capital flows were scarce and directed primarily to debt servicing. Private banks stopped granting new credits and FDI inflows were affected by the decline in growth in most economies of the region.

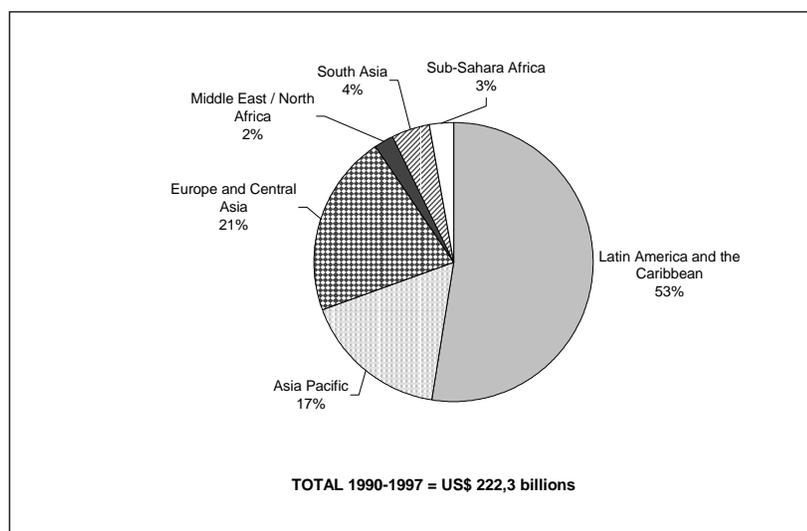
In the second half of the 1980s, some debt/equity swap programmes were implemented. These, while reducing the exposure of banks, also reduced debt servicing and helped to attract new foreign investment from abroad. These programmes gave foreign investors the option of buying debt securities, with strong discounts on secondary markets, and which, when revalued subsequently, enabled them to purchase companies facing insolvency.

Such programmes occurred especially in Argentina, Brazil, Chile and Mexico and accounted for a significant proportion of foreign capital inflows. Between 1988 and 1990, debt/equity swaps accounted for 35% of inflows into Argentina and between 1985 and 1990, for 55% into Brazil, 75% into Chile and 31% into Mexico. Such swaps were not often used in the privatization of mining operations.

At the beginning of the 1990s, debt/equity swaps were suspended, except in Argentina, and replaced by privatization initiatives. Between 1990 and 1998, privatization programmes generated approximately US\$ 140,000 million for the governments of the region.¹

According to estimates and if planned privatizations in Argentina, Brazil and Venezuela materialise, accumulated income from privatization's between 1990 and the end of the third year of the new millennium will amount to approximately US\$ 180,000 million.

Figure 1
PRIVATIZATION REVENUES IN DEVELOPING COUNTRIES



Source: ECLAC, on the basis of World Bank data

Unlike the situation in the 1980s, there was an upturn in net capital transfers to countries in the region in the 1990s yielding increasingly positive values. Compared with a negative balance of US\$ 176,100 million in the 1980s, transfers in the 1990s showed a positive balance of the order of US\$ 132,870 million.

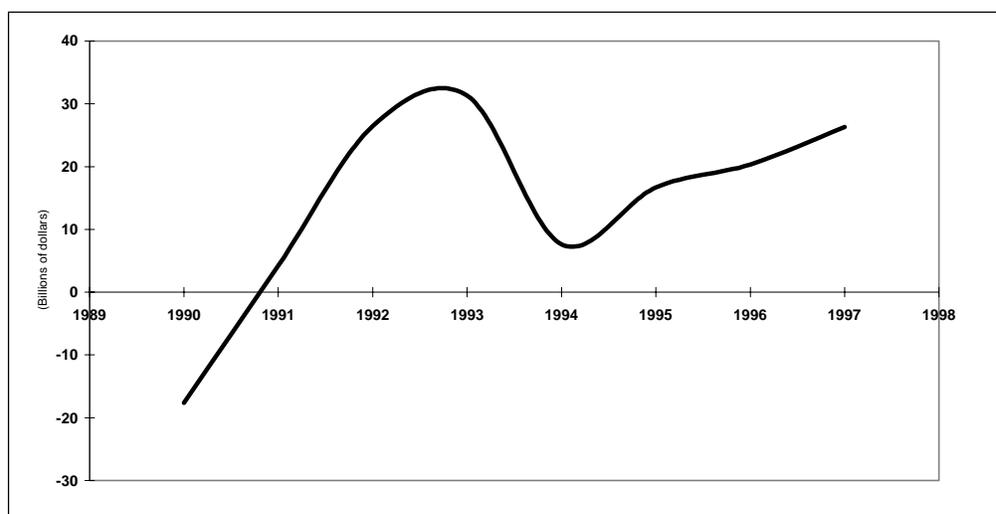
FDI inflows increased from US\$ 10,679 to US\$ 44,021 million between 1991 and 1997. While there has been a marked concentration of such flows since Mexico and Brazil account for just over 40%, investments picked up practically throughout the region. Countries in the region started to make inroads into the international capital markets attracting growing amounts of

¹ The World Bank estimates that between 1990 and 1997, income from privatisation in Latin America amounted to US\$ 116.5 billion dollars. If the privatisations of Vale Do Rio Doce and Telebras in Brazil are added to this income, the amount at the end of 1998 would probably be greater than the 140,000 million dollars. See World Bank, "Global Development Finance", Washington 1999.

investment, especially from institutional investors. In this way, for example, the international bond issues of the countries of the region increased from US\$ 7,242 to US\$ 53,477 million dollars between 1991 and 1997. Hence, FDI and portfolio investments started to account for a higher share of total external financing and loans, for a smaller share. The factors contributing to this new mix were, among other things, the debt crisis, the spectacular expansion of international capital markets over the last three decades, the generation of new stock-market products, the expansion and diversification of the portfolios of institutional investors and the reduction in real interest rates on international markets.

Moreover, the fall in interest rates significantly alleviated the burden of foreign debt servicing. The ratio of total interest due to regional exports plummeted sharply in the 1990s from 22% in 1991 to close to 15% in 1997. The strong net capital transfer played a decisive role in stabilising the economy and growth rates started to recover but still at a slow rate compared to the 1960s and 1970s.

Figure 2
LATIN AMERICA: NET TRANSFER OF RESOURCES



Source: ECLAC

As will be seen later, since the late 1980s, countries of the region had started to carry out economic and institutional reforms designed to boost foreign capital inflows and reduce country-risk substantially. This process was aimed at promoting a broad liberalization of the economy, with emphasis on market mechanisms and a leading role for private enterprise in the allocation of resources and with a corresponding reduction in the relative weight of the State.

This trend observed throughout the region is due, largely, to the leading role assumed by the World Bank and the International Monetary Fund in defining economic policies. The crisis of the eighties left little room for manoeuvre in the management of national economic policies. The idea was to create a stable economic environment for attracting foreign capital through the application of stringent fiscal policies, policies designed to ensure monetary and exchange-rate stability and a legal framework favourable to capital investment.

II. New environment for foreign investment

Most of the countries of the region implemented economic reforms for downsizing the State and boosting the role of the private sector, establishing guarantees of security for foreign investment, liberalising capital, goods and service markets and introducing greater flexibility on labour markets.

A. No discrimination against foreign capital

In most countries of the region, foreign and national investors enjoy equal rights. In some countries, this entitlement is enshrined in the Constitution in order to guarantee legal security for foreign investments and generally to award the same rights as those enjoyed by local investors on a series of issues that are crucial to the treatment of investments, although there are exceptions to this rule in some countries.

The Constitution of Argentina guarantees equal treatment for national and foreign investors and agreements relating to reciprocal promotion and protection of investments are given precedence over federal laws. In Bolivia, there is no specific constitutional provision on the matter, but the legislation in force confers on the foreign investor the same rights, duties and guarantees as those enjoyed by national investors.

In 1995, the Congress of Brazil adopted constitutional amendments to the same effect and eliminated provisions that restricted access by foreign investors to mining operations.

In Chile, the principle of non-discrimination is also enshrined in the Political Constitution, under which an application may be made for the amendment of any rule of law that is deemed discriminatory, provided that this is done within a year of its enactment.

The Constitutions of Peru and Colombia also establish that national and foreign investment are subject to a same regulatory framework while, in Mexico, the Constitution does not guarantee this right but some restrictions on foreign investment have been eliminated under the North American Free Trade Agreement (NAFTA). At present, foreign investors may acquire up to a 100% share of the capital in mining companies. To this end, the foreign investors must present to the Ministry of Foreign Affairs a document in which they agree to consider themselves as nationals and, by the same token, pledge to not invoke the protection of their respective governments.

In Venezuela, no legal or constitutional amendments have been introduced to guarantee equal treatment for local and foreign investors in the case of legal persons. Natural persons may obtain the same treatment after one year of residence in the country, by applying for a National Investor's Credential from the Office of the Superintendent of Foreign Investment (SIEEX), which grants them the benefits established for local investors. Investors that do this forfeit the right to repatriate their capital. In Venezuela, there were no provisions that limited the entry of foreign investors in the mining sector, although, in practice, the substantial mining rights awarded to the Corporación Venezolana de Guayana and existing restrictions on the award of mining concessions have made negotiations somewhat complex.

By virtue of the principle of non-discrimination, foreign and local investors are subject to the same tax regime and incentives in most of the countries of the region. This has also meant the elimination of barriers to entry for new projects and active participation in privatization procedures in some countries.

Although there are no major restrictions, a few do apply in some countries on issues of national security. Thus, in Argentina, there are still barriers to the investment of foreign capital in mining operations in border areas; in such cases, express permission of the competent authority is required. This condition also applies in the case of uranium extraction and other activities relating to the mining of radioactive ores.

Similar restrictions exist in Bolivia; where foreign investors may not invest in mining operations located less than 50 km. from the border or own or acquire land in such areas. The same applies in Chile, which has an integration agreement with Argentina relating to mining in border areas. In Colombia, restraining clauses apply to activities relating to national security and concession agreements take the form of administrative contracts.

There are some restrictions if the mining operations involve protected areas, as in the case of Peru, which also restricts mining concessions and the acquisition of mines within 50 km. of national borders. Lastly, in Venezuela, the percentage share that foreign investors may acquire in prospective privatization is considered on a case by case basis.

B. Registration and authorization

All countries in Latin America grant access to mining exploration and exploitation on the basis of concessionaire regimes and keep a register of the mining titles awarded to avoid any overlap of rights among mining operators. In this sense, special laws and codes govern mining,

since it is a natural resource, which falls within the domain of the State. Nevertheless, foreign investment laws are applicable in all areas, unless these conflict with actual mining provisions.

With respect to the registration and authorization of foreign investments there are two marked trends in the region. There are countries, like Argentina and Bolivia, where foreign investment can enter without registration or authorization and others, such as Brazil, Chile and Colombia, where registration and authorization are required.

In Brazil, foreign investors must register their investments with the Department of Foreign Capital (FIRCE) in the Central Bank in order to obtain authorization to repatriate their capital and profits, while investments that are subject to the payment of royalties or franchises or to technological transfer must also be registered with the National Institute of Industrial Property (IMPI).

In Chile, investors require the authorization of the Foreign Investment Committee (CIE). The procedure is handled expeditiously, usually within a month. Experience shows that the authorizations are hardly ever rejected.

With respect to registration, provisions in force establish that disposal of foreign currency, importation of physical goods or related credits; debt/equity swaps and reinvestment of earnings with the right to repatriation, must be registered with the CIE. Furthermore, investors must present to the CIE annual accounts of capital investments made in various forms in the previous year.

In Colombia, foreign direct investment does not require prior approval, except in the case of mining, petroleum operations and public services, which fall under the National Planning Department (DNP). For purposes of capital repatriation or remittance of earnings, the investment must be registered with the Bank of the Republic. Companies receiving foreign capital inflows must supply to the DNP, the Bank of the Republic and the Office of the Superintendent of Foreign Exchange information regarding their capital movements.

In Mexico, registration and authorization depend on the amount of capital invested. Hence, authorization is granted automatically for investments of less than 85 million new pesos (approximately 14 million dollars) in activities from which foreigners are not excluded. For larger investments, an authorization must be obtained from the National Foreign Investments Committee (CNIE). The criteria applied include the impact on employment and worker training, technological inputs, compliance with environmental standards and the increase in competitiveness in national production.

In Peru, no previous authorization is required, except in cases where there are concessionaire regimes. The registration of foreign investments, which is a formality, is necessary for the remittance of earnings or for deduction of royalty payments from taxable earnings. In Venezuela, a similar regime exists and the investment must be registered within 60 days with the Office of the Superintendent of Foreign Investment (SIEX).

C. Remittances abroad

With respect to remittances of dividends, royalties and capital, two major trends emerge. On one hand, there are countries, such as Argentina, Bolivia, Mexico, Peru and Venezuela, which do not apply regulations of any kind, except registration, in some cases, or prepayment of taxes; and others that do impose conditions. The latter relate to possible restrictions due to short-term balance-of-payment problems, as in the case of Brazil and Colombia; or restrictions concerning the management of debt-for-cash swaps.

In Brazil, the Central Bank has the right to prohibit repatriation of capital for a limited time and to restrict remittances of earnings to an annual equivalent of 10% of the capital investment and registered reinvested earnings. The 1995 reform did away with restrictions on the payment of royalties between subsidiaries and parent companies. Taxes on earnings repatriated by subsidiaries of foreign companies were also eliminated.

In Colombia, repatriation of capital or dividends is subject to restrictions when the level of international reserves is below the value of quarterly imports. In the case of mining and petroleum activities, remittances may be conditional on compliance with special terms contained in the concession agreement.

In Chile, capital may be remitted one year after being invested while sums invested for the purchase and use of promissory notes and debt/equity swaps may be remitted only after ten years. In this case, earnings, including any that may have been accumulated during the first four years, may be remitted abroad as of the fifth year, provided that the annual transfer does not exceed 25% of the total amount.

D. Operating requirements

Most countries in the region have removed the operating requirements applied in previous decades in connection with the purchase of local inputs, preferences for local engineering or hiring of local staff. Nevertheless, some regulations still apply to the hiring of local personnel.

In Brazil, two thirds of workers must be local and must receive at least two thirds of the total payroll. In Chile, current labour regulations require that at least 85% of the workers of a company be Chilean although this provision does not affect large mining operations as it does not apply to ventures that employ more than 25 persons. In Mexico, the operating requirements were eliminated retroactively to bring standards in line with NAFTA regulations.

In Venezuela, in any company with 10 persons or more, at least 90% of the workers must be nationals and receive no less than 80% of the payroll. As an offshoot of the "Buy Venezuela" programme, a preference exists (but only as regards hiring by State mining companies) for those bidders who, all things being equal, employ a higher proportion of local inputs, engineering, human resources or other factors.

E. Treatment in case of expropriation

In most countries of the region, expropriation is considered justifiable –subject to payment of the appropriate compensation– in cases of overriding public interest. It is interesting to note that there were no cases of expropriation or nationalization of foreign companies in the 1990s. Expropriation of mining operations may be justifiable, if absolutely necessary, for purposes of development of such operations.

In Argentina, compensation must include the real value of the expropriated goods as well as damages. In Bolivia, the Constitution adduces reasons of public interest or non-compliance with social objectives and guarantees the relevant compensation. In Brazil, expropriation is justifiable for reasons of necessity, public utility or social interest, with the guarantee of payment of a fair compensation. This is agreed on by the parties or through legal channels.

The law empowers the Chilean Government to carry out expropriations in case of public interest and national interest and, in both cases, special legislation to this effect is necessary. In the

absence of any mutual agreement, the court determines the amount of compensation, which must correspond to the total value of the asset and is payable in advance in cash.

The Constitution of Colombia matches the pattern pointed out earlier but leaves scope for expropriation without compensation, although this option has not been used. In 1992, an attempt was made, but the Constitutional Court declared it unlawful. The existence of this provision has been an obstacle to the conclusion of bilateral investment treaties.

The Constitution of Mexico states that expropriations may proceed on grounds of public interest and with the payment of compensation guaranteed within one year. This must be equivalent to the established commercial value, although this value may be contested before the relevant judicial authority. Furthermore, conditions that vary from the norm may apply in cases where the country is a party to an international treaty that applies other criteria or where it is necessary to resort to arbitration.

In Peru, the Constitution in force limits expropriation to cases of public interest or national security. In such cases, legislation must be passed by the Congress of the Republic and compensation awarded on the basis of a valuation. This option also exists in Venezuela in the context of cases of public interest.

F. International arbitration

Most of the countries reviewed accept international arbitration, albeit with some differences. Brazil, for example, is not a member of international arbitrating tribunals for investment disputes. However, it has signed bilateral agreements, which allow this, although rulings issued abroad must be confirmed by Brazilian judicial authorities.

Bolivia has signed the United Nations Convention on the Recognition and Enforcement of Foreign Arbitrate Awards and the Inter-American Convention on International Commercial Arbitration.

In Chile, the national courts have jurisdiction for all effects except where a bilateral agreement recognises the international arbitration, while the decisions of foreign courts are recognised in Colombia, except where their sentences conflict with articles of the Constitution.

Foreign investors in Mexico have recourse to the same judicial process as their Mexican counterparts. Special procedures and processes are allowed for foreign investors only if their countries of origin are members of NAFTA. In such cases, the dispute can be submitted to international arbitration.

Since 1992, international arbitration has been available for disputes between foreign investors in Peru and the State or public companies. Nevertheless, disputes that predate the relevant act are subject to national legislation, except in the case of investors who have signed legal stability agreements which, by mutual agreement, and provide for a choice between national or foreign arbitration. International arbitration is recognised in all bilateral agreement signed by Venezuela. In the absence of such agreements, the national legislation applies although, in some cases, a bi-national or extraterritorial jurisdiction has been accepted.

G. Investment protection agreements

Since the 1980s, most countries in the region have signed investment protection agreements. Argentina has signed more than thirty bilateral agreements that include countries of Europe, Asia, Africa, North America and Latin America itself; it is a member of the agreement for

the settlement of investment disputes and is also a signatory of the Convention Establishing the Multilateral Investment Guarantee Agency (MIGA) (November 29, 1990²).

Bolivia has signed the Convention on the Settlement of Investment Disputes between States and Nationals of other States (1965). It is also a signatory of the Convention Establishing the Multilateral Investment Guarantee Agency (1986). It has reciprocal investment protection agreements with seven countries of the region and countries of the European Union and North America and double taxation agreements with Argentina and Germany³.

Mercosur member countries have signed reciprocal investment protection agreements with each other and Brazil has agreements of this type with Chile and Venezuela. It also has double taxation agreements with eighteen countries, including countries of the European Union and Argentina and Ecuador⁴.

Chile has signed investment protection agreements with countries of the European Union, the United States and four countries of the region and is a signatory of the Convention on the Settlement of Investment Disputes between States and Nationals of Other States (ICSID)⁵.

Recently, Colombia was involved in the negotiation of a number of reciprocal investment protection agreements with countries of the European Union and Chile. It is also a signatory of the Convention Establishing the Multilateral Investment Guarantee Agency (MIGA) and has an agreement with the United States within the framework of the Agreement on Investment Guarantees of the Overseas Private Investment Corporation (OPIC)⁶.

In Mexico, the investment protection issue is related basically to the obligations of NAFTA; moreover, Mexico has an agreement for the exchange of tax information with the United States.

Peru has signed reciprocal investment protection agreements with countries of the European Union, Eastern Europe, Asia and four other Latin American countries⁷. It has ratified a convention on the settlement of investment disputes and the Convention Establishing the Multilateral Investment Guarantee Agency (MIGA) and has an agreement with the United States within the framework of the Overseas Private Investment Corporation (OPIC). It has also signed the Convention on the Settlement of Investment Disputes between States and Nationals of Other States of the International Centre for Settlement of Investment Disputes (ICSID).

Venezuela is also a signatory of the ICSID Convention and has signed investment protection agreements with Argentina, Brazil, Barbados, Chile and Ecuador.

² Argentina has signed bilateral agreements with Armenia, Austria, Belgium/Luxembourg, Bolivia, Bulgaria, Canada, Chile, China, Cuba, Denmark, Ecuador, Egypt, Finland, France, Germany, Hungary Italy, Jamaica, Malaysia, Netherlands, Poland, Republic of Korea, Rumania, Senegal, Spain, Sweden, Switzerland, Tunisia, Turkey, United Kingdom, United States (OPIC) and Venezuela.

³ Bolivia has signed international reciprocal protection agreements with Argentina, Belgium/Luxemburg, Canada, Chile, China, Cuba, Ecuador, France, Italy, Mexico, Netherlands, Peru, Spain, Sweden, Switzerland, United Kingdom, United States (OPIC).

⁴ Brazil has signed double taxation agreements with Argentina, Austria, Belgium, Canada, Denmark, Ecuador, Finland, France, Germany, Hungary, Italy, Japan, Luxemburg, Netherlands, Norway, Portugal, Spain and Sweden.

⁵ Chile has signed reciprocal investment protection agreements with Argentina, Belgium/Luxemburg, China, Cuba, Denmark, Ecuador, Finland, France, Germany, Italy, Malaysia, Norway, Sweden, Switzerland, Spain, and Venezuela.

⁶ In Colombia, reciprocal investment protection agreements have been negotiated with Argentina, Canada, Chile, France, Germany, Israel, Netherlands, Switzerland and United States.

⁷ These agreements have been signed by Peru with Argentina, Bolivia, China, Colombia, Czech Republic, Denmark, Finland, France, Germany, Netherlands, Norway, Paraguay, Portugal, Republic of Korea, Spain, Sweden, Switzerland, Thailand, United Kingdom and United States (OPIC).

III. Changes in mining legislation

Most of the countries of the region introduced substantial changes in their mining legislation in the 1990s, Chile being the exception. Reforms had already been implemented in Chile in 1983, allowing the effective use of foreign investment incentives, which had entered into force in 1974 (Decree-law 600, Foreign Investment Statute).

In Peru, the strong State interventionism that had prevailed was reversed in mid-1991, when Parliament delegated authority in order to promote investment and employment. Thus, Decree-Law 708 implied a fundamental change in the national mining policy, not only because it released mining rights held by the State, and initiated modernization of the concession regime, but also because it established a series of criteria for ensuring that economic policy would apply effectively to mining development.

The Argentine mining code, which has been in force, notwithstanding a series of amendments, since the nineteenth century, was changed radically in 1993 and 1995 for purposes similar to those sought by the Peruvian reform; this puts Argentina at the top of the list of emerging mineral producers in Latin America; the list also includes Cuba, which enacted promotional legislation in 1994.

In Brazil, the Mining Act had been amended several times since its enactment in 1967, especially since the entry into force of the 1988 Constitution and the new environmental provisions, which, with some additions, were all incorporated into the 1996 Mining Act.

Bolivia and Guatemala enacted new mining legislation in 1997 and Costa Rica, Honduras and Venezuela did the same between 1998 and 1999; at the end of the 1990s, reforms were pending in Colombia and Ecuador.

A. State domain and public interest

Mining legislations throughout Latin America confer on the State absolute, inalienable and imprescriptible domain over its mineral resources. Such domain is exercised according to the political organization of each nation. Thus, in Argentina, which is a federal State, mineral resources may be assets of both the nation and the province in which they are located, hence the need for a Federal Mining Agreement to ensure applicability of the mining reform of the 1990s in order to guarantee a unified policy, above all, with respect to the treatment of investments.

In this respect, mining titles confer a special form of ownership that differs from full private ownership, since they relate to the use and usufruct of resources belonging to the State and are awarded on the basis of rights and obligations. Such titles grant permission to identify potential resources, exploit them in a manner consistent with preservation of the natural endowment and benefit from the sale of a product that contains value added, which varies depending on the amount of processing, and which is the outcome of the work of the holder of the title in question.

Mining legislations in Latin America consider the development of mineral resources to be a matter of public interest, public utility or social interest. Full exercise of a mining right implies access to the relevant facilities (other natural resources, servitudes, etc.) and respect for the property rights of other persons but the establishment of arbitration criteria is necessary in case of disagreement between the parties. In general, no legislation excludes the State from exploitation of resources over which it exercises eminent domain, a point which, in Chile, for example, is not merely academic but a reality, since the State controls almost 50% of the country's mining output. Venezuela is a special case as, currently, the entire territory is subject to mining regulations that operate in favour of the State (Decree No 2039). In Argentina, the possibility of State exploitation is not ruled out either, but the State is bound to carry out the corresponding works within the statutory time-frame, failing which the area is automatically released from its status as reserved area in favour of private bidders.

It should be noted that Colombia is the only country that treats mining areas where indigenous peoples hold preferential rights as reserve areas. In Bolivia, foreigners are denied concessions in border mining areas, while, in Chile and Peru, an express authorization is required.

While the State is not excluded, the different forms of discrimination that was developing since the 1950s have been eliminated. Today any person with legal capacity, whether national or foreign, can accede to the exploration and/or exploitation of the resources, by means of a mining right or title, except in border zones, for which some countries demand express authorization. Although some countries still require an authorization for the transfer of mining titles, in most of them it is sufficient to simply inform the mining authority about the relevant transfer, which has permitted the development of a market for mining rights.

Most mining codes contain regulations relating to the register of mineral resources which is kept by the central authority of mines. Argentina and Ecuador are exceptions, since the provincial and regional authorities respectively are responsible for the register, while, in some countries, this is entrusted to special agencies, such as the National Mining Cadastre Services in Bolivia and the National Geological and Mining Services in Chile.

B. Concessionary regimes

The mining reforms in Latin America have established three systems of concession. On the one hand, the Administrative Regime, whereby the State, in the exercise of its prerogative in the matter, grants a mining right or title through an agency of the public administration, which is, at the same time, the mining authority. This is the most common system in the region (Argentina, Bolivia, Brazil, Costa Rica, Cuba, Ecuador, Guatemala, Honduras, Mexico, Peru, Uruguay and Venezuela), although it has been criticised for being too flexible in terms of the discretionary powers it grants to the mining authority.

On the other hand, there is a legal regime, which is applied only in Chile. This regime is reported to provide greater stability and less discretionary power than the administrative regime but it requires a very solid and efficient judiciary, which remains independent of the political power. The law establishes the procedure and the concession is granted by the judge of the judicial district in which the concession is located, who attests to compliance with legal requirements. The Ministry of Mines in Chile does not award mining concessions; its role is limited to defining mining policy.

Lastly, there is a contractual regime under Colombian law, which is already being implemented to all intents and purposes in Venezuela. In Colombia, the rights and obligations of the concessionaire as established by law are set forth in an administrative contract. In Venezuela, since the mining areas are for the most part under the control of the State-owned Corporación Venezolana de Guayana (CVG), mining companies must sign contracts with CVG, acting as risk operators in exchange for a fee paid to the concession-holder.

1. Typology of mining rights

Most regional legislations grant rights for mineral exploration and exploitation, in some cases, for benefaction and, less often, for marketing. Concessions granted for exploration and exploitation are the most common, although the designation used may vary.

In Argentina, the law establishes exploration permits; in Brazil there is the exploration (mineral research) licence; Colombia and Guatemala use the term exploration licence, while, in Cuba, the law provides for geological survey permits. The differences are not merely of terminology, since legal distinctions exist, although these are beyond the scope of the present study.

Generally, contracts are established for specific periods, which may be extended once it has been demonstrated that the work is progressing. The maximum deadline is six years (Mexico) and the minimum is one year (Colombia). In Peru, the deadline is actually indefinite with penalties for non-compliance with obligations. The size of the concession area granted in the exploration rights varies.

In most of the countries of Latin America, mining rights are granted as concessions. Concessions are usually granted for terms of 20 to 25 years. In Colombia, the term is 30 years and the assets revert to the State when the concession expires. In Mexico the maximum term is 50 years. Argentina, Peru and Chile are exceptions, since concessions are awarded expressly for unlimited periods and the irrevocability of the right awarded is clearly established in the agreement.

In Peru, concessions also exist for ore beneficiation; transport and service work at the mining operations, each involving specific obligation. In Cuba, in addition to the mining concession, a processing concession is also granted.

2. Procedures

Mining legislation generally establish application procedures for obtaining concessions and seek to avoid such procedures being subject to regulations except in very specific areas or where clarifications are needed on points not clearly spelled out in the relevant act. This contributes to legal stability and provides greater guarantees to investors.

The discretionary power of the relevant authority tends to be limited to the strict minimum. Peruvian legislation establishes operating principles, such as "administrative silence" and "presumption of truth" in order to speed up procedures, a point on which it differs from many legislations in the region.

3. Rights and obligations

By its very nature, ownership of mining operations implies rights and obligations as established under mining legislation. The rights enshrined in most mining legislations of the countries of the region relate to the following:

- i) Receipt of appropriate and timely information from the competent organisms;
- ii) Guarantees of application of the established procedure;
- iii) Legal protection and exclusiveness of the mining right with no limits other than those established by law;
- iv) Full exercise of the mining right included in the transfer;
- v) Free access to the areas covered by the concession;
- vi) Freedom to carry out the work and operations necessary for development of the deposits while respecting environmental standards;
- vii) To request and obtain servitudes and the capacity to request and obtain other rights necessary for the operations (e.g. water rights);
- viii) Ownership of the substances and products that are the subject of the concession;
- ix) Right to market the product freely on the domestic and external markets.

Most mining legislation establish the principle of free trade of mineral output and specify that such trade may be exercised without the award of a concession. The exceptions are Cuba, which states that this right must be included in the concession agreement, and Venezuela, where marketing operations are subject to monitoring and inspection.

Usually, marketing companies that are not concession-holders must register and request a licence from the mining authority. In the case of nuclear minerals (uranium and thorium), the State has the right of first refusal to acquire them under market conditions (Argentina and Chile).

The obligations defined under the regional mining legislation included the following:

- To carry out, and to be seen to carry out, the operations that are the subject of the mining concession;
- To make the required investments and comply with development programmes;
- To guarantee the security of mining operations and protect the environment.

Most legislation requires concession-holders to submit projects, work and investment plans as well as work reports to the mining authority for its consideration. Mining operators must honour their production schedules and not suspend them without due justification and authorization.

Chile is the only country that does not insist on this regulation. In Peru, proof of output must be given by presenting statements of transactions, while, in Colombia, the concession-holder must pay to the State a guarantee deposit equivalent to a specific percentage of its estimated production.

The issue of the effective execution of the operations for which a concession is granted has been the subject of intense debate in Latin America. As a rule, the fact that a concession was in operation served as a form of protection, a criterion which, in some countries, had constitutional backing. Nevertheless, monitoring compliance with the rule was invariably difficult and was subject to the discretion of officials. Currently, concessions tend to be subject to payment of a royalty. If this charge is too high, it will create barriers to entry; if it is too low, it leads to preemption of facilities.

It is assumed that the applicant for a concession has the resources to work it and above all meets the eligibility criteria established by most legislation. If difficulties are experienced in financing exploration operations, the title may be returned or transferred or a joint venture may be formed with any entity that has access to the necessary resources. Once the capability has been established, once again, there are options in terms of transfer or association.

Moreover, it is assumed that if the demand exists, there will be an investor prepared to invest the necessary resources. If, despite this, a concession-holder that does not have the resources persists in maintaining the concession, the royalty or licence payment should be increased progressively so that the preemption of rights does not become a barrier to entry into the mining business. This was precisely the basis for the criterion adopted in Peru; they improved on the Chilean model, leading to a higher royalty for a company that holds on to a concession without exploiting it than would apply in Chile.

Certain specific obligations are established under some legislation. Hence, for example, in Colombia and Ecuador, there are obligations regarding hiring of staff and local services; and, in Ecuador, a percentage of profits must be set aside for projects to improve facilities or to benefit the local population.

4. Lapse of a concession

In countries where a concession is protected by the payment of a royalty or licence, non-payment of the sum due will cause the concession to lapse. However, under most legislation, the unjustified interruption of operations is a ground for termination. In some countries, other causes are established, such as non-compliance with miners' safety and health regulations and environmental provisions.

5. Registration of titles and settlement of conflicts

In most countries, the mining authority is responsible by law for keeping a mining registry. There are a few exceptions: Argentina, whose registry is kept by the Registrar of Mines; Chile, where because of the legal system governing concessions, the registry is kept by the Registrar of Mines which comes under the judiciary. In Ecuador, the national registry keeps the mining registry, while, in Venezuela, the concession is registered in the Record Office of the district where the concession is located.

All legislation state that mining titles must be registered. In Colombia, Ecuador, Mexico and Peru, titles become effective after entry in the mining register.

With respect to the settlement of conflicts, all legislation contain provisions on mining jurisdiction, which is found within the functions of the central mining authority (administrative jurisdiction).

There is no provision for arbitration or for the possibility of referring issues relating to mining concessions to the courts of the country of origin of the international investor.

The judicial system in Bolivia provides for chambers for mining issues within higher courts of justice. This act as courts of appeal on procedures initiated before the administrative authorities, which exercise jurisdiction on mining issues (Vice-Prefects and Superintendents of Mines). In Colombia, the municipalities under whose jurisdiction the mining exploitation falls take part in conflict resolution, but the decision-making capacity is vested in the mining authority. In Chile, the judiciary has jurisdiction and refers to the Judge of the civil court where the concession was registered. The mining code in Venezuela does not establish special rules on conflict resolution but refers cases to the judiciary.

C. Environmental protection

Most mining legislation contain regulations relating to environmental impact assessment, conservation, rehabilitation and non-pollution. The concession-holder must pay compensation for environmental damage.

Ecuadorian law makes specific reference to the impact of operations on national forests and on their catchment areas and lays down restrictions. In Cuba and Mexico, there is clear referral to general environmental legislation. In Guatemala, referral is a condition for the award of mining rights.

Some environmental legislation makes clear reference to the rehabilitation of land after use (Bolivia) and environmental impact assessment (Chile). In Brazil, references to mining are found in the resolutions of the environmental authority (the obligation to conduct environmental impact assessments and damage control plans whose approval is a condition for the granting of mining rights).

Argentina, Colombia, Cuba and Ecuador specify the possibility of suspending works and even terminating the concession on grounds of environmental damage. In Argentina, the constitution of a special provision to cover environmental damage is mandatory. The companies set the amount that is tax-deductible and award an Environmental Quality Certificate as an incentive for compliance with environmental provisions.

D. Fiscal regime

The fiscal regime governing mining activity in Latin America is generally the same as applied to any other economic activity. However, mining is also subject to specific charges that include rentals, royalties, surface taxes and authorization fees.

In Argentina an annual fee is payable for the maintenance of mining right, but during first five years of a concession there are no other taxes (national, provincial or municipal) except for service charges. In Brazil there is a per-hectare fee for exploration rights, charged at a progressive rate until handover of the final exploration report; there is also an extraction duty based on sales value, differentiated by product (for example, aluminium 3%, iron ore 2%, and gold that does not come from small-scale operations 1%). This is levied prior to industrial processing, and is paid to the states, federal district and municipalities.

In Chile there is an obligatory license fee, which is not tax deductible except at the preparation stage (organization expenses). Income tax legislation provides differential treatment according to size (small-scale miners pay a single tax).

In Colombia holders of exploration licenses in large-scale mining pay a surface rental (one day's minimum wage per hectare and per year). Royalties are also paid (in cash or in kind) on a percentage of gross output mined, 70% of which is paid to the municipalities and 30% credited to Mining Development Funds. The municipalities have to earmark at least 50% of these royalties and specific mining taxes to conservation and protection of the environment. There are also other specific taxes to coal, gold and platinum.

In Ecuador, the royalty paid on mining operations of any kind is equal to 3% of gross output. In Cuba there is a mandatory surface rental that varies according to the different phases of prospecting, exploration and extraction. The Council of Ministers can also order the royalty payments.

In Mexico, the federal law on property rights establishes a per-hectare duty for mining concessions, and the concession only remains valid on payment of this. In Peru, the concession-holder pays a progressive concession maintenance fee, 40% of which is distributed to provincial and district municipalities where the concession is located.

In Uruguay, a prospecting fee is payable, together with a surface rental for the right to explore, and a user charge for the right to work the mine. In Venezuela, there are taxes on exploration and extraction (payable in cash or kind), that vary according to the type of product; and there are also surface taxes and other special duties.

E. Investment incentives

Mining legislation seldom includes a special section on investment incentives, but Argentina and Peru are exceptions. These two countries, along with Chile, are those that offer the strongest incentives for mining investment, although the benefits in Chile are not exclusive to mining activity but arise from the Foreign Investment Charter (DL 600), which covers all activities.

In general, the regional trend is for benefits not to be differentiated, with the market to decide on the best allocation of resources. Nonetheless, the orientation of economic policy, especially regarding the impact of exchange rate, trade and tax instruments, is decisive in an "international-price-taking" activity like mining, and it is essential for economic policy not to generate higher production costs.

In Argentina, mining enterprises have the right to fiscal stability for a 30-year period counted from the date of the corresponding feasibility study. This means that the overall tax burden facing an enterprise investing in the Argentine mining sector will not rise as a result of any rate-hikes or newly created taxes, whatever their denomination, at the national, provincial or municipal levels.

In Peru, stability clauses also apply to the exchange rate and tariff regimes, except for the exchange-rate parity itself and the reimbursement, drawback and/or refund of taxes for export purposes. In Argentina, the Federal Mining Accord guarantees uniformity of policy in mining investment and all provinces that signed the agreement offer the following incentives:

- Expenses incurred in prospecting, exploration and other studies are deductible from profit tax.
- Deduction of investments made to expand installed capacity and those required during the operational phase.
- Exemption from profits tax of gains arising from new mining rights and capitalization, up to 50% of the valuation of exploitable deposits free of all taxes.
- Exemption from stamps duty in respect of capitalization.
- Exemption from assets tax.

- Exemption from import duties on purchases of capital goods and equipment, extending also to spare parts and accessories.
- Royalties payable to provinces capped at 3% of the mine-head value of the ore extracted.
- Deduction from profits tax of up to 5% of the operating costs of extraction and processing, and tax preferences to be used to set up a special provision for environmental purposes.
- Financing regime for the payment of value-added tax (VAT) charged on the purchase of new capital goods and infrastructure investments.

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In Chile, the Foreign Investment Charter (DL 600) prohibits discrimination against foreign investment, despite specifying that access to domestic credit can be restricted if necessary. DL 600 also guarantees the free repatriation of capital and profits, together with a total income tax burden of 42% for ten years, applicable to investments of over US\$ 5 million. Stability in taxes levied on sales and services, and in the tariff regime, is also guaranteed throughout the investment period.

In the case on investments of at least US\$ 50 million, the duration of tax stability with a maximum tax burden of 42% is extended to 20 years. Stability in tax rules and export regulations is also guaranteed, as is free access to the foreign-exchange market to pay authorised liabilities.

In Peru, the law to promote private investment in mining (DL 708) establishes that this activity may not be subject to regulatory discrimination of any sort on exchange rate, tariff, finance or taxation issues. This rule prevents any measure undermining the free remittance of profits and dividends, or the payment of financial liabilities, and guarantees free access to the foreign exchange market. The provision covers any other form of regulation already in existence, which means, for example, non-discrimination when charging for infrastructure use.

Peruvian mining legislation also provides for Tax Stability Contracts, in which any changes—such as new taxes, alterations to tax payment regimes or rules making it mandatory to purchase State securities—are non-applicable to investors signing them. If changes are made, mining companies have a once-only opportunity to opt for the common tax regime, while still maintaining stability. Even where taxes are substituted, the new tax has to be paid only up to the amount of the one it replaces; if a tax is abolished, on the other hand, it must continue to be paid.

In terms of content, the Peruvian stability contract goes beyond the concept of tax stability. The State commits to not altering contract unilaterally, thereby voluntarily restricting its ability to introduce amendments in the future.

In reality this is a contract providing general stability in the factors influencing the investment, since it also guarantees free access to the foreign-exchange market and non-discrimination on exchange-rate issues. In the event of differential exchange rates becoming necessary, for circumstantial reasons, the investor is guaranteed the best available exchange rate for foreign-trade operations. There is also an assurance that the free commercialization of mining products will in no circumstances be restricted. Moreover, the stability of any special regimes in force at the time of making the investment is also guaranteed, such as tax drawback mechanisms, temporary entry and other similar issues.

Tax stability contracts last for 10 or 15 years. The 10-year agreement governs mining operations amounting to between 350 and 5,000 metric tons/day, plus firms already producing within that range that raise their production by 100%, and investors presenting investment programmes worth US\$ 2 million.

The 15-year stability contract applies to investors with an initial capacity of at least 5,000 metric tons/day and those presenting investment programmes of at least US\$ 20 million to initiate

any mining activity. Existing firms can avail themselves of this contract if they put forward investment programmes amounting to US\$ 50 million.

Apart from the benefits of tax stability, the most important feature of the Peruvian legislation is the 1991 law to promote private investment in mining (DL 708). This establishes the principle of tax only being charged on the income distributed by owners of the mining enterprise, with all taxes on production being deductible from taxes on corporate income and net assets. The legislation also gave Peruvian mining a drawback mechanism for refunding domestic taxes for the first time. Apart from this, there are a series of benefits that are applicable to all mining companies. The cost of acquiring a concession is tax-deductible, as are the expenses incurred in the exploration, development and preparation of the mining operation. Investments in public-service infrastructure are also deductible from taxable income, and, together with assets related to housing and staff welfare, they are not counted in the tax base.

The law also establishes that no new taxes will be applied implying a local or regional share in mining revenues, and that mining fees are defined as representing a proportion of the taxes paid by the mining enterprise and not an additional charge.

Peruvian law also grants stability in administrative procedures, in a framework of procedural dispatch, which gives legal force to the principles of presumption of truth and positive administrative silence.

Incentives for mining investment have become the general rule in most mining countries in Latin America, in context of fierce competition to attract new capital that is also influenced by investment prospects in other developing regions.

In Bolivia, the reinvestment of profits and dividends in the mining industry is free of all existing national or departmental taxes, or any that may be created in the future. In Cuba, prospecting and exploration expenses are refundable and can be deducted from taxable profits; and mining concession holders can take advantage of the accelerated depreciation mechanism.

In Ecuador, the Import Duties Committee sets the lowest tariffs on imports of capital goods and equipment used by mining, and these are exempt from value-added tax unless they are also produced locally. Mining exports are untaxed, except for a 0.5% levy on FOB values earmarked for the Child Nutrition and Protection Fund.

In Guatemala, specific taxes on mining are deductible from corporate income tax, while sectoral imports are exempt from taxes and tariff duties on inputs, capital goods, equipment, spare parts and accessories, unless there is also local production. Venezuela also offers exemption from import duties.

IV. Trade and taxation regimes in mining compared⁸

A. Trade Liberalization

The removal of barriers to domestic and foreign trade has been a widespread trend in the countries of the region, involving the suppression of State monopolies and other restrictions on trade flows, together with lower levels of tariff protection. This trend has been positive for investment, because, as mining is an international-price-taking activity, it needs to obtain inputs and capital goods at the most competitive market prices.

Chile was a pioneer in this field, starting its trade liberalization process back in 1974 when it eliminated non-tariff barriers and slashed nominal tariffs from an average of 94% to a flat rate of 10%. The 1982 crisis saw the latter raised again up to 35%, but the rate had returned to 10% again by 1 January 1999.

Trade liberalization in Argentina began at the end of the 1980s, when most restrictions were lifted, and the average tariff was lowered from 40% to 15% between 1988 and 1992.⁹ Bolivia lifted import prohibitions and abolished import licences in 1985, setting a flat tariff of 20%.

⁸ This section only includes taxes on mining activity.

⁹ Tariffs on Argentine imports from Mercosur range from a minimum of 0% to a maximum of 33%. Of total tariff lines, 26% have a rate below 7%, 50% pay a rate less than or equal to 14%, and 87% pay a tariff no higher than 21%.

In 1990, the duty on capital goods imports was lowered to 5% while the rate was set at 10% for other products. Currently the average ad-valorem tariff rate is 9.67%.

In Brazil, the foreign trade liberalization process began in 1985 with a progressive dismantling of quantitative controls and a streamlining of administrative procedures; this was followed by successive tariff cuts between 1987 and 1993 that lowered the average rate from over 50% to 14%. Although import prohibition was eliminated in 1990, the license requirement is still in force but has become increasingly expeditious. Although the Brazilian liberalization process broadly accompanied the regional trend, it had its setbacks. Currently, the average tariff is 9%, with rates ranging from 0% to 70%. As many as 70% of all tariff lines have rates equal to or below 14%, with just 2% of tariff lines above 21%, and 46% no higher than 7%.¹⁰

The trade liberalization process in Mexico also started in 1985, while in Colombia it began in 1990. Mexico eliminated a large number of quantitative restrictions and in 1987 abolished prior permit requirements. It also streamlined the tariff structure to five rates ranging from 0 to 20%, bringing the average tariff down to 10% from its 1982 level of 30%. In 1989, however, the average rate climbed back to 13.26% where it remains today on imports from all countries apart from the United States and Canada, Mexico's partners in the North American Free Trade Agreement (NAFTA). As these countries are major suppliers of inputs and capital goods for mining, the agreement effectively lowered the sectoral tax burden.

The initial phase of the Colombian trade liberalization process saw a lifting of quantitative restrictions on imports, after which tariff rates began to be lowered. In late 1990, the prior permits were eliminated across virtually the entire tariff universe, but the requirement of registering imports at the National Foreign Trade Institute (INCOMEX) was maintained, and the trade liberalization process came to a halt in early 1992. During that period, the average tariff rate came down from 44% to 12%, where it still stands today.

Trade liberalization in Peru began in the second half of 1990, and included a lowering of tariffs, together with the elimination of import licenses, quotas and prohibitions. The average tariff fell from 66% in 1990 to 18% in late 1993, and currently stands at 13.47%.

Lastly, in 1989, Venezuela slashed the number of product lines subject to import restrictions from 2,200 to just 200. Excise duties, which in some cases raised the maximum tariff to 940%, were suppressed, and the average rate dropped from 35% to 10% between 1989 and 1993. At the time of writing, however, the average tariff in Venezuela has edged back up to 12%.

B. Characteristics of tax regimes in selected countries of the region¹¹

Most of the countries in the region have introduced reforms to simplify taxation procedures and eliminate or minimize specific or earmarked taxes. It cannot be said that there is a special tax regimes for the mining sector, since it is subject to the same taxes as other activities. However, in some cases there are differences in income-tax deduction mechanisms, along with different rates on certain taxes and/or exemptions. In some countries royalties are also payable on mineral extraction, hile tax stability regimes and specific incentives have been introduced, together with schemes for refunding value-added tax (VAT) or sales tax (IGV).

¹⁰ In 1995, tariffs were raised to protect national industry, quotas were set on automobile imports, and incentives were announced for investments in the automotive sector; these measures were transitory, however.

¹¹ Annexes 1 and 2 provide summaries of the main taxes applicable to mining in the region.

In Argentina, the current tax structure is dominated by the tax on profits or earnings and value-added tax, which have rates of 33% and 18% respectively. Mining receives a refund on VAT paid on input purchases since this benefit covers all imports to be used in production for the export market. Dividend payments to foreign shareholders and remittances abroad are not subject to tax; but there is a tax on interest payments currently set at 15%, although the rate in some cases is lower in the context of bilateral trade agreements. Lastly, the Argentine provinces charge royalty payments on mining subject to an upper limit of 3% of mine-head value.

In Bolivia, general profit tax is charged at 25%, but mining is subject to an additional levy of 25% if taxable income is still positive after applying two supplementary deductions. These are: 33% of the capital stock invested in exploration and exploitation activities, and 45% of the net annual sales value from each of the firm's mining operations, subject to an upper limit of US\$ 50 million on each operation. The VAT rate stands at 13%, with reimbursement for exporting firms, including mining; a general sales tax of 3% is also payable. Apart from this, there is a 12.5% tax on remittances of dividends and royalties, or in respect of technical assistance, and a 12.5% tax on interest remittances. Lastly, mining pays royalties on the value of metallic content, but only when this tax is higher than the tax on profits.

Brazil has a progressive profits tax. A basic rate of 15% is applied up to 240,000 real, with an additional 10% being levied on amounts above this. There is also an 8% charge on profits envisaged as a "Social Contribution" (CS). Dividend remittances are untaxed, but interest payments face a non-deductible levy of 15%, although the rate can be lower if so stipulated in bilateral agreements.

On top of this, there is the sales tax on merchandise and services (ICMS), which has a flat rate for all products but can vary from one state to another. The top rate on mining operations is 18%, and a firm can obtain a reduction or even exemption in the case of a unanimous vote by the state finance ministers' committee CONFAZ. In addition, mining pays royalties to the states of up to 3% of net CIF invoiced value, which is deductible from taxable income.¹²

In Chile, profits are covered by first category income tax charged at 15%, after which the companies' shareholders are subject to one of the following two taxes: (1) "global complementary tax" which is a progressive personal income tax paid by private individuals resident or domiciled in Chile; (2) the "additional tax" which is paid by private individuals or firms that are not resident or domiciled in Chile. This has a rate of 35% in the general regime (up to 49% under the stability regime) and is applied when dividends are distributed. Shareholders subject to either of these two taxes can deduct payments made by the firm under first category tax.

There are other taxes that are withheld at source; these include a tax on interest remittances which can be lowered from 35% to 4%, a 40% tax on payments made to non-resident firms or individuals for the use of brand-names and patents, or for services rendered (except freight, shipping expenses, cargo-handling, sampling and product analysis, etc.), and a 22% tax on insurance.

In Chile VAT is charged at a flat rate of 18%; however, capital entering the country under the Foreign Investment Charter DL 600, enjoys VAT exemption on a specific list of capital goods covering a large proportion of those used in mining activities.

In Colombia profits tax is charged at 35% and there is an additional 2% levy if the company opts for the fiscal stability regime; distributed dividends are currently taxed at 7%, and the branches of foreign companies are subject to a complementary tax of 7% on profit remittances.

¹² The general trend in the various Brazilian states is to attract mining investment through fiscal incentives. These vary from one state to another, and are extended periodically, making it necessary to permanently update information on mining taxation in Brazil.

When profits are reinvested, however, the payment of profits tax is deferred while the reinvestment is carried out. This deferral is converted into an exemption if this process lasts longer than five years. At the present time there are no taxes on services or technical assistance contracted abroad. In Colombia sales tax is levied on most domestic transactions at a general rate of 16%, with higher rates for certain products considered luxuries.

In Mexico, profits tax is charged at 34%, and there is mandatory profit-sharing giving workers the right to 10% of gross profits. There is also a 1.8% tax on assets, which is applied only when no profits are generated and comes into force three years after the start of operations; there are also ad-valorem taxes for the use of state-owned land. VAT is levied at 15% on all transactions, but is refundable on equipment and services used in the production of exportable goods. Interest payments are taxed at 15%, but this can be reduced to 4.9% under bilateral trade agreements.

Tax reform in Peru has followed the prevailing regional trend toward systemic simplification by reducing the number of taxes. Profits tax is levied at 30%, and there are no taxes on dividends or profits remitted abroad. There is also a mining fee, which is payable to regional and local governments, but this does not entail an additional tax burden since it is merely a distribution of 20% of the profits tax paid by the owners of mining activity. Although not a tax, workers have a claim on 8% share of gross profits. Peru has a 14.53% payroll tax, and also a 0.2% tax on asset values. Royalties paid abroad can be freely remitted but are subject to a tax rate of 30%, while the 18% general sales tax (IGV) is refundable in the case of mining. There is also a 1% tax on interest arising from foreign loans that have an interest rate no higher than Prime Rate plus 6% or Libor plus 7%; if the interest rate is higher than this, a 30% tax is levied on the difference.

Venezuela has taxes that differ according to economic activity, and also between extractive activities. In the case of profit tax, mining activity pays a progressive rate that varies from 15% to 34%. Ad-valorem royalty payments range between 4% and 7% according to the mineral concerned, while sales tax, which is not refundable, is charged at an average rate of 15.5%, in a 5%–20% range.

C. Incidence of taxation on mining operations

As the previous discussion shows, the countries of the region make use of a wide variety of tax instruments. In general terms, these can be divided into three broad categories according to their effects on mining activity: (1) taxes that affect the fixed cost of mining projects; (2) those that affect variable costs; and (3) taxes that are levied on company profits.

1. Taxes affecting fixed cost

This category includes levies on imports (tariffs) and transactions (VAT, IGV), together with mining fees, and other taxes affecting fixed costs on a once-only or once-a-year basis, to pay for the services provided by public administration (registration rights, stamp duties, etc.).

a) Import duties

The aims of tariff policy have varied in recent decades, shifting from a protectionism approach favouring national production to a policy of opening up the domestic market and encouraging international competition. At the present time, tariff rates throughout the region are lower than those prevailing in earlier decades, while prohibition, prior authorization and import permits have also been eliminated in the framework of trade liberalization policies, as discussed in the previous section. Although the trend has been to establish flat tariffs and neutral trade policies,

in some countries mining enjoys special facilities for the payment of tariffs (instalments), together with exemptions and the refund of import duties under the drawback mechanism. The justification for this is that such taxes raise the cost of initial investments (machinery and equipment), which in the mining sector are very high. These incentives are also applied in export promotion regimes.

b) Taxes on transactions

Most of the countries of the region charge taxes on domestic and foreign transactions through value-added (VAT) or general sales taxes (IGV), which raise the fixed costs of mining projects by being charged on machinery and equipment purchases.

Most of the countries of the region also provide incentives for exporting firms, given that taxes paid on the purchase of capital goods, equipment and services associated with investment expenses cannot be passed on to the final consumer; this is especially relevant in the case of mining, which is an international-price-taking activity. These incentives include partial or total exemption and the reimbursement or refund of transaction taxes.

c) Taxes on mining rights

The traditional concept of mining rights, known locally as “amparo por el trabajo”, that used to be contained in most mining legislation, has been replaced by payments that have different names in the various countries of the region (licence, maintenance duty, etc.), which charge for the granting of mining concessions and are generally paid yearly, thus representing a fixed cost in both the exploration and operational phases. These taxes contribute to the mining authority’s own funds and help defray administrative expenses, while also benefiting local, provincial, state or regional governments, as appropriate, in varying proportions.

d) Asset Taxes

Some tax legislation in earlier decades included levies on available mineral deposits, but this approach has fallen out of favour in recent years, as it is in the public interest for companies to spend more on exploration so as to increase the country’s mining wealth. However, there are other forms of tax, which are charged on fixed assets, such as plant and installations and even the infrastructure needed for the execution of projects. Such taxes are usually deductible from the income-tax base, however.

2. Tax payments that act on operating costs

This type of tax payment includes tariffs on the import of inputs or services hired abroad, together with taxes on transactions subject to total or partial exemption or reimbursement schemes, given that they cannot be shifted on to the selling prices of mining commodities. Some countries, however, charge royalty payments in the belief that the State should receive a payment for the use of a non-renewable natural resource.

a) Royalties

The regional trend is to tax the results of economic performance, although some countries see royalties as a good way for the localities that host mining activities to gain a share in the fruits of the enterprise. Royalties are a form of tax that is secure and easy to calculate, guaranteeing a stable flow of fiscal revenue during the active life of the mine. Mining companies usually do not agree with this point of view, considering them to be “blind” taxes that take no account of the margins between costs and the prices that can be obtained on the market. Royalties are applied on a volume or weight basis, and in ad-valorem terms. In the first case, a fixed nominal amount is charged on a pre-established unit of measurement. As output depends on the useful life of the mine, fiscal revenues of this type tend to dwindle steadily unless the available reserves are

increased in a sustained way. Ad-valorem royalties take a base price for the mineral and grow proportionately as the market price rises. Royalties are paid on the value of sales, so theoretically a minimum fiscal income is assured and the State shares progressively in any earnings over and above the base price.

The royalty regimes that exist in the region are all ad-valorem, differing from one another in terms of whether or not payment is complementary to profits tax. In the first case, royalties are only paid if their amount exceeds the profit tax; in the second case, they can be deducted from the tax base.

b) Taxes on interest payments

Taxes that affect operating costs also include those charged on loan interest, the incidence of which depends on the mining project's debt/equity ratio. The aim of such taxes is to ensure a flow of fiscal income during the operational phase, and partially compensate the treasury for the lower level of profits tax it is likely to receive while the investment is being amortised, given that interest payments are generally deductible from the tax base.

The enterprise's debt/equity ratio and level of debt service both have important tax implications, for two reasons: (i) because interest payments are normally deductible from the tax base, thereby considerably reducing the level of profits tax in years when the company is repaying any loan; and (ii) because debt service is usually programmed so as to pay off the whole loan in the initial years of the project¹³, which has an additional negative effect in terms of the present value of fiscal revenues.

As a result, some countries in the region set limits on enterprise debt/equity ratios, making interest payments above this limit taxable; other countries impose limits on interest rates.

3. Taxes based on economic results

Taxes in this category depend on the regime that exists for taxing company profits and may be either proportional or progressive, although the former is more frequent among the countries of the region. The key issues in applying a proportional profit tax are the definition of taxable income and the tax rate to be applied.

The simplest form of progressive tax is one that sets an increasing rate for each annual level of taxable income. In this way, the treasury benefits from exceptional earnings that may result from special market conditions.

The problem of fiscal income arising from the exploitation of non-renewable resources is a subject that has been widely debated in the region. One possibility is to charge higher taxes once investors have recovered their invested capital –an idea that arose recently in Chile.

Some countries also charge taxes on the distribution or remittance of dividends, which in reality constitutes an additional income tax. The underlying fiscal objective in this type of tax is to stimulate reinvestment and discourage the repatriation of business profits. Nonetheless, the impact of such taxes on foreign investors can be limited by the existence of agreements to avoid double taxation.

A very important issue when charging taxes on economic results relates to the deductibles that are allowed, for the effective tax rate firms pay will depend not only on the nominal rate, but also on deductions from the tax base and the rate at which investments can be written off.

¹³ Within the first half of the project's expected life – usually in less than 10 years.

Depreciation and amortization are programmed according to accounting methods that are usually based on the expected life of a specific asset. The simplest amortization method is linear over the entire productive life of the mine.

Other accounting methods involve a higher rate of deduction in the initial years, which then decreases over time. The wider the range of the deductions and the faster the amortization, the lower will be the net present value of fiscal revenues and the higher the net present value of the project and, hence, investors' profits.

Some countries recognise the depletion of mineral deposits, and allow this to be deducted from the tax base. The two most common methods are those that allow fixed nominal amount of depletion per unit of volume extracted, and those, which apply a fixed percentage on the annual sales value.

Under the principle that the State is owner of the country's mineral resources, deductions can be viewed as negative royalties since they reduce the payment the State receives in return for the mining concession.

The justification for these deductions is based on the idea that mineral deposits represent for the enterprise a form of capital that needs to be amortised, since investments will have been made in order to discover them. Legislation in most of the region's countries allows rapid amortization of exploration investments, however, so these deductions represent an additional incentive for investors.

Another important taxation issue is the possibility of carrying forward losses into subsequent tax years. Although time limits are usually set on this, it is a very attractive incentive as a means of reducing the risk assumed by investors. Without this benefit, firms would not be able to take full advantage of deductions made in the initial years, which generally exceed the level of operating profits. By alleviating the effects of the project development stages and the negative effect that could arise from low prices in the mining phase, the State contributes to the amortization of losses by accepting lower revenues.

D. Impact of taxation on investment decisions

Taxation affects the calculation of production costs and, hence, a project's expected rate of return; it is therefore one of the main factors influencing investors' decisions.

The study carried out by the Colorado School of Mines (1997)¹⁴ has been taken, with modifications, as a source for analysing the impact of taxation on investment decisions.

It is well known that companies evaluate possible investment opportunities using the net present value (NPV) concept. An investment will only be undertaken if the NPV is positive; and the higher its value, the greater the profitability; a negative NPV, on the other hand, will cause the firm to reject the investment.¹⁵

¹⁴ Colorado School of Mines, Institute for Global Resources Policy and Management, *Global Mining Taxation Comparative Study*, Colorado, September, 1997.

$$NPV = \sum_{t=0}^n \frac{CF_t - T_t - K_t}{(1+r)^t}$$

CF_t : Expected cash flow estimated in any given year.

T_t : Estimated tax burden in any given year.

K : Value of capital invested in a given year.

r : Discount rate set by the company (corresponds to the minimum rate of return required).

t : Year, counted from the base year to n (which represents the length of the mine's life).

A key factor in this calculation is the discount rate set by the investor. This represents the minimum rate of return required, and reflects the firm's preference for present as opposed to future value streams, taking into account, among other factors, the perceived risk involved in carrying out a given investment. The study by the Colorado School of Mines assumes a discount rate of 12%, which seemed quite close to investors' expectations at the time of the study, in view of the risk inherent in mining activity.

The minimum condition for going ahead with an investment is that the NPV should be equal to 0, which implies an internal rate of return equal to the discount rate of 12%; clearly it is better for the NPV to be positive, as this will give a rate of return higher than 12%. On the other hand, if the NPV is negative, the internal rate of return will be less than the expected 12%, and the investor would most likely reject the project.

Based on these premises, the Colorado School of Mines study gathered information on mining taxation in 23 countries throughout the world, and fed this into two models similar to those used by companies in pre-feasibility studies.

One model relates to a copper-mine project, and the other to a gold mine. The models assume that all geological conditions, technical processes (considering only mining, grinding and concentration) and capital costs are equal in all countries, and the only element that differs is taxation. The models quantify the impact of taxation, making it possible to identify the tax profile of each country and discern the differences between tax regimes.¹⁶

According to the models, if taxes were not paid, the internal rate of return would be 25.01% in gold and 19.72% in copper –the maximum achievable under these conditions.

The Colorado study only considered six of the region's countries –Argentina, Bolivia, Brazil, Chile, Mexico and Peru– but this document will also include Venezuela. Applying the two models to the tax legislation in force in these seven countries leads to several conclusions, including the following: up to three tax profiles can be distinguished among the countries of the region, which differ from each other according to the weight of the fiscal burden during the early years of operations. Although rates of return differ, on the whole the region's tax regimes are competitive at the world level.

1. International competitiveness of tax regimes in force in Latin America

Current tax structures among the Latin American countries included in the analysis allow mining companies to achieve some of the best internal rates of return of all the 24 countries studied worldwide.¹⁷ In fact, the tax structures in Chile, Argentina and Peru would allow rates of return among the top four in the gold project model, and among the three best in the copper project model in the case of Chile and Argentina (see table 1).

¹⁶ The models include the main taxes paid in each country and not all taxes currently in force. The following assumptions are made:
1) COPPER MODEL: Reserves of 2 billion lbs., a concentrate grade of 28% and a recovery rate of 89%. Average annual sales of 110 million lbs. Development period of two years and productive life of 20 years. Debt/equity ratio 60%:40%, loan period of five years at 8% interest. Initial capital US\$ 550 million. Annual operating costs of US\$ 0.45/lb and price of US\$ 1.20/lb. Annual rise in costs and prices: 3%.

2) GOLD MODEL: Total reserves: 2 million troy ounces. Grade of 0.1 ounces/metric ton and a recovery rate of 85%. Average annual sales of 250,000 troy ounces. Development period two years, and productive life of the mine – 10 years. Debt/equity ratio 60%:40%, loan period of five years at 8% interest rate. Initial capital US\$ 188 million. Operating costs US\$ 220/troy ounce per year, and price of US\$ 400/troy ounce. Annual rise in costs and prices: 3%.

¹⁷ This chapter on comparative mining taxation has been updated with the latest tax amendments introduced in Argentina and Peru, and includes new information not considered in a previous paper (ECLAC, Medio Ambiente y Desarrollo series No. 11, LC/L.1148, October 1998). The most important changes concern: (1) income tax in Argentina raised from 33% to 35%, and the tax on interest payments from 13.2% to 15%; (2) Tariff payments by instalment in Peru (3) inclusion of assets tax in Mexico; (4) no inflation indexing for amortisation and losses carried forward, which has been considered for Mexico and Peru in the paper referred to.

The internal rates of return that can be in Latin America are generally in a higher range than those obtainable in other regions of the world (see table 2).

Table 1
INTERNAL RATES OF RETURN FORM MODEL PROJECTS (Percentages)

Gold Project Model			Copper Project Model		
1	Chile ^a	21.0	1	Chile ^a	16.8
2	Argentina	17.8	2	Ethiopia	15.1
3	Philippines	16.9	3	Argentina	14.8
4	Peru	16.1	4	Indonesia	14.5
5	Indonesia	15.8	5	Greenland	13.9
6	Sweden	15.8	6	South Africa	13.8
7	South Africa	15.8	7	Sweden	13.8
8	Greenland	15.5	8	Bolivia	13.7
9	Namibia	14.9	9	Peru	13.6
10	Brazil	14.7	10	Ghana	12.7
11	Ethiopia	14.2	11	Papua New Guinea	12.7
12	Mexico ^b	14.1	12	Mexico ^b	12.5
13	Ghana	14.0	13	Brazil	12.3
14	Bolivia	13.7	14	Namibia	12.3
15	Papua New Guinea	13.6	15	Philippines	12.1
16	Australia	12.3	16	Australia	11.8
17	Canada	11.7	17	United States	11.8
18	Venezuela	11.5	18	Canada	11.2
19	Tanzania	10.1	19	Venezuela	10.2
20	Kazakhstan	10.0	20	Tanzania	9.8
21	United States	9.9	21	Kazakhstan	9.5
22	India	7.9	22	India	8.6
23	China	-3.2	23	China	4.7
24	Uzbekistan	-10.0	24	Uzbekistan	4.5

Source: ECLAC, based on Colorado School of Mines op.cit., and official information on the tax regimes in Latin American countries.

Notes: ^a If the taxation were applied to the case of a joint-stock corporation, rates of return would be 19.3% in the gold project model and 16.5% in copper. ^b The rates of return cited for Mexico were calculated under a zero-tariff assumption, with equipment being imported from Canada and/or United States, the country's NAFTA partners. If tariffs had to be paid, on the other hand, rates of return would be 12.1% in gold and 10.8% in copper.

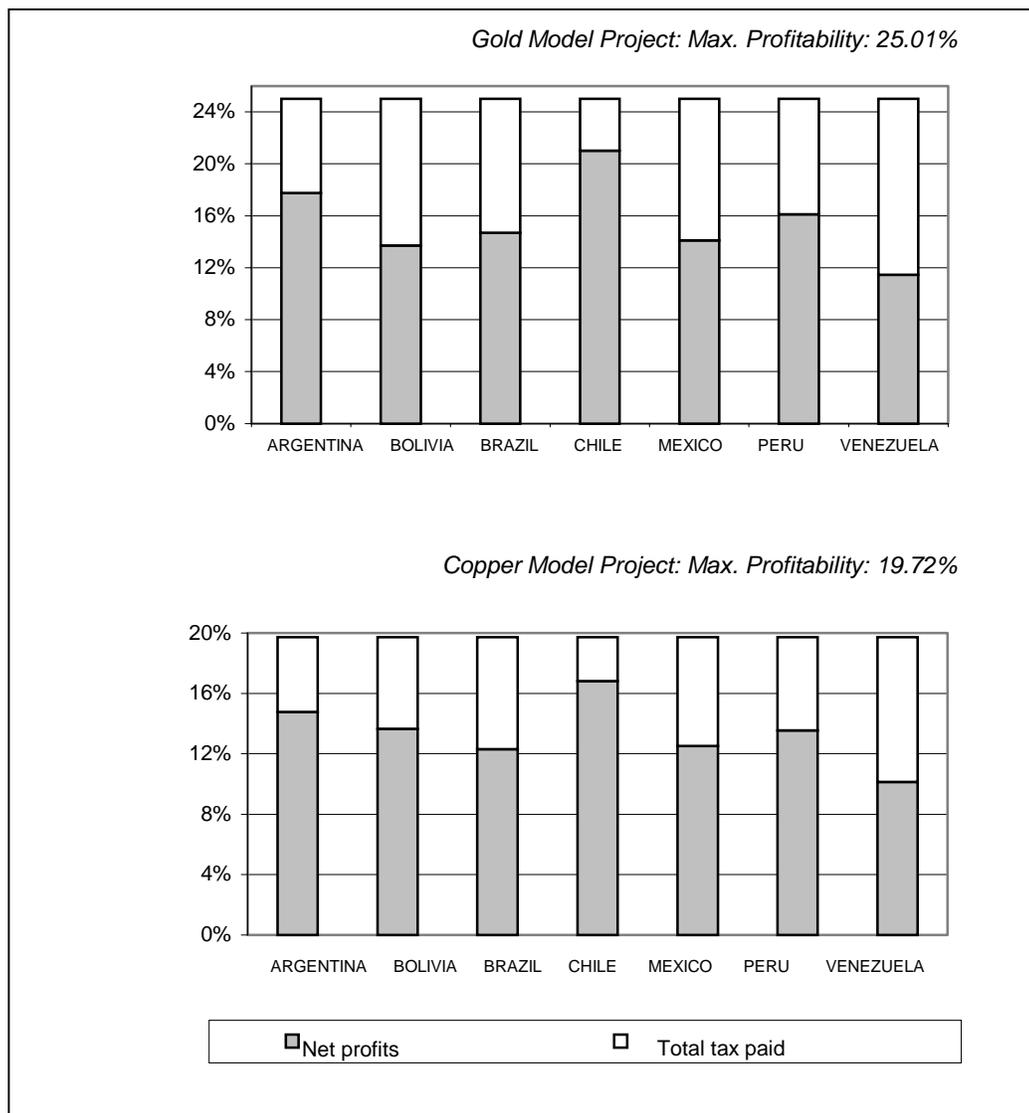
Table 2
INTERNAL RATES OF RETURN BY REGION (Percentages)

Gold		Copper	
Latin America	11.5 – 21	Latin America	10.2 – 16.8
Australasia	-10 – 16.9	Australasia	4.5 – 15.1
Africa	10.1 – 15.8	Africa	9.8 – 15.1
North America	9.9 – 11.7	North America	11.2 – 11.8

Source: Table 1

Figure 3

DISTRIBUTION OF PROFITABILITY BETWEEN BUSINESS EARNINGS AND TAX PAYMENTS



Source: ECLAC, based on Colorado School of Mines op.cit., and official information on the tax regimes of Latin American countries.

The models applied do not consider the reinvestment of profits that some countries, such as Chile, Mexico and Peru, encourage in their respective legislation by only taxing distributed or remitted profits. If the models included profit reinvestment, the rates of return obtainable in these three countries would be even more favourable for investors.

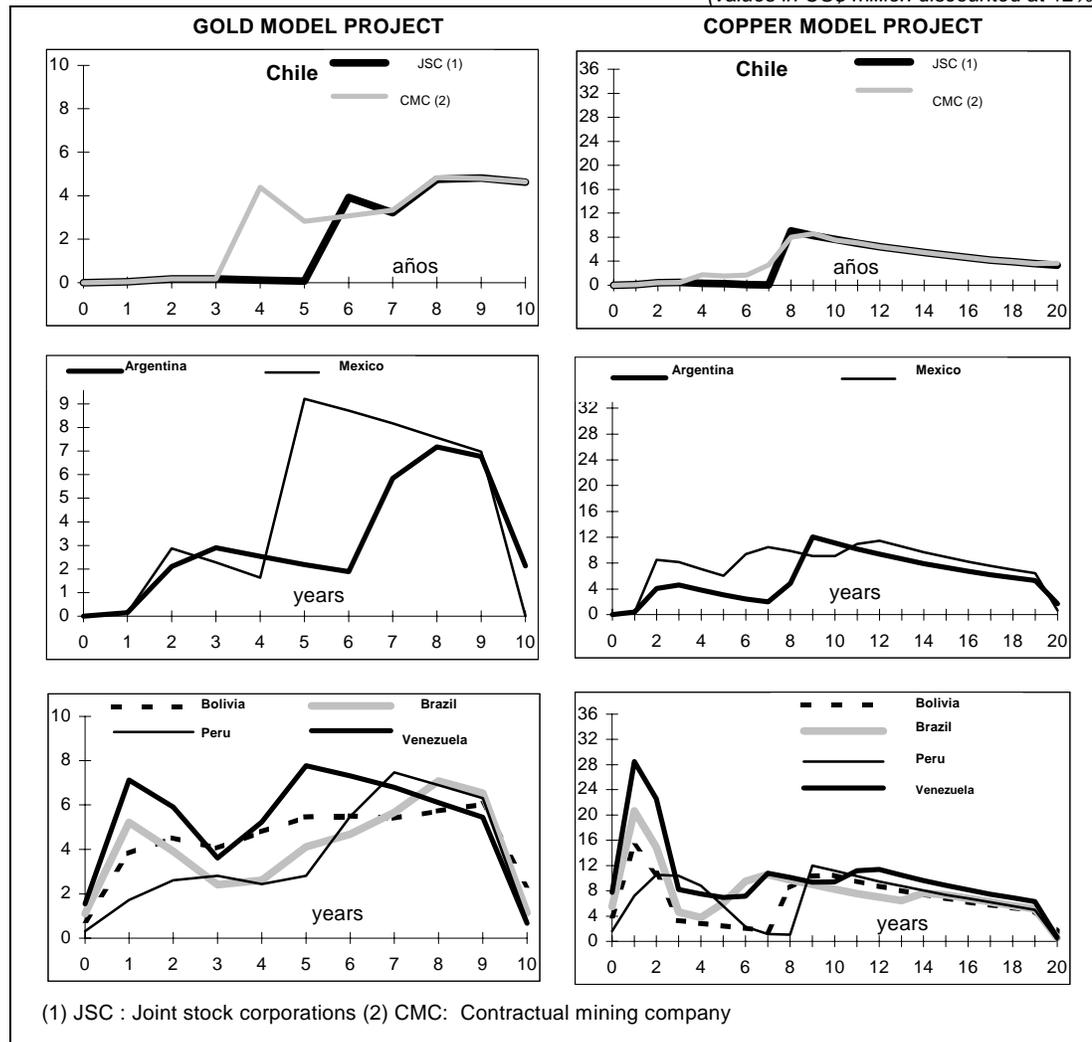
It should also be pointed out that the models are theoretical, and the only reason for using them in this paper is to compare different tax regimes. They do not take other differences into account, such as the quality of ore bodies, wage costs, state of infrastructure, etc. factors which on the whole would improve the profitability of mining projects in Latin America still further.

2. Tax profiles in Latin America

Figure 4 shows three clearly defined tax profiles. In Chile, fiscal revenue is virtually nil until the first appearance of financial profits (in the case of joint stock corporations), or accounting profits (in the case of contractual mining companies). Argentina and Mexico, in contrast, charge taxes as from the start of production, regardless of whether or not profits are being made. Finally, Bolivia, Brazil, Peru and Venezuela all have a significant positive tax burdens from the project set-up stage, in other words beginning in the years prior to the start of production. Given that rates of return are time-sensitive, taxes paid in the early years imply a higher relative tax burden than those paid in later years.

Figure 4
TAX REVENUE

(values in US\$ million discounted at 12%)



Source: ECLAC, based on Colorado School of Mines op.cit., and official information on the tax regimes of Latin American countries.

3. Tax incidence in project set-up years affects fixed costs

The first significant taxes paid in mining are those levied on the purchase of equipment and inputs needed to carry out the project. These may be VAT, IGV, and/or tariffs, taxes that have a significant incidence on costs since mining is a capital intensive activity and most capital expenditure is undertaken before production begins.

a) Argentina, Chile and Mexico

Tax legislation in Argentina and Chile includes exemption or reimbursement of taxes levied on equipment purchases. In Mexico, equipment and services used by mining in the production of exportable goods benefit from the refund of VAT, but foreign purchases are subject to tariffs. However, in practice, the tax treatment in Mexico is similar to that in Argentina and Chile, since imports of capital goods and inputs can take advantage of the benefits of NAFTA.

In Argentina, since mining is an export activity, it benefits from the financing of VAT payments, the cost of which is assumed by the State; and as the tax is subsequently refunded, the result is that most imported equipment is ultimately tariff-free.

In Chile, there is VAT exemption for a specific list of capital goods entering the country under the auspices of the Foreign Investment Charter DL 600. Moreover, if the mining enterprise ends up paying VAT on any equipment or services whatsoever, it has the right to full reimbursement, as well as exemption from the payment of any tariffs.

b) Bolivia, Brazil, Peru and Venezuela

In Bolivia, mining companies benefit from the refund of VAT, but they are liable for General Sales Tax (IGV) and import duties, although both of these levies are deductible from taxable income. In Brazil, most of the equipment used in mining is exempt from import duties or sales tax, but it is liable for the sales tax on merchandise and services (ICMS), which is deductible from the corporate income tax base and has a rate that can be lowered on certain inputs.

In Peru, mining enterprises benefit from reimbursement of General Sales Tax (IGV) levied on capital goods purchases, inputs and services. Import tariffs are payable, however, although there is the possibility of payment in instalments when the import is made in the pre-production stage.

In Venezuela, mining is tariff-exempt but does have to pay VAT on goods and services, which is then deductible from the corporate income tax base.

4. Royalties add to variable costs

Royalties are taxes paid from the start of production, which ensure a minimum fiscal income but also reduce the margin between international prices and production costs. Of the countries analysed in the region, Argentina, Brazil, Bolivia and Venezuela all have royalty payments.

Royalties in Argentina are revenue for the provinces, but in order to prevent them from discouraging investment, the Federal Mining Accord limits them to 3% of the mine-head value of the mineral. In Brazil, royalties benefit the states and are restricted to 3% of net CIF billings. In Venezuela, royalties vary according to the mineral being extracted, ranging from 4% in the case of gold to 7% for most other minerals. In these three countries, however, royalties are deductible from the income tax base, while in Argentina in Brazil a deduction can also be made in respect of the depletion of mineral reserves.

In Bolivia, royalties are calculated as a percentage of metallic content valued at international benchmark prices, and the rate applied varies according to the mineral concerned and the ranges in which the market price fluctuates. In this country, royalties are seen as complementary to profits tax, in other words, only the larger of the two tax liabilities applies.

5. The deductions allowed by the different tax regimes are at least as important as differences in profits tax rates

The effective tax rate on profits depends not only on the nominal rate, but also on the deductions and special allowances that are applied to the tax base. The allowance categories

considered, together with the degree of acceleration allowed in writing off investments, reduce the effective tax rate and thereby raise the rate of return.

a) Level of profits tax

Chile's profits tax regime is the most attractive for investors, as the rate applied is just 15%. Moreover, if dividends are distributed, the amount levied in profits tax is used to set against a personal income tax of 35%. This ultimately means that in Chile only dividends are taxed, thereby stimulating reinvestment. The tax on dividends varies according to whether the company that distributes them is a partnership or joint stock corporation. The former does not pay this tax if they record accounting losses, and in the event of making financial profits, they would be able to distribute them tax-free. This regime benefits mining companies in Chile, since most of them are set up as partnerships. Joint-stock corporations do pay the tax when they distribute dividends arising from financial profits, even when they have accounting losses.

In Brazil, the minimum rate of profit tax is 15%, but a 25% rate is charged on profits in excess of US\$ 240,000. In Bolivia a 25% rate is charged on all profits, and there is an additional 12.5% tax on dividends. In Argentina, the rate is 33%, while in Peru and Mexico it is 30% and 34%, respectively, but this is charged on distributed profits only, thereby giving incentives to reinvestment. Venezuela has progressive tax rates that run from 15% to 34%.

There are also some additional taxes in Brazil, Mexico, Peru and Venezuela, which investors view as a profits tax surcharge. These include a social contribution, which is charged on taxable profits, amounting to 8% in Brazil and 10% Mexico. In Peru, the equivalent rate is 8%, but it is charged on net profits. In Venezuela, the amount is defined by agreement between the workers and the firm, and varies between 15 and 60 days' wages. In Mexico, Peru and Venezuela, the issue is covered via mandatory worker profit sharing.

b) Deductions from the taxable base

Deductions from the taxable base generally include operating costs, along with the amortization of capital expenditure over a period normally corresponding to the useful life of the depreciating asset. If it is desired to provide special incentives in tax legislation, there is the possibility of accelerating the rate of amortization and/or allowing the deduction of certain taxes and other special allowances. The purpose of this, in the first case, is to facilitate the rapid recovery of capital invested by delaying the appearance of taxable profits; and in the second case, by lowering the amount of corporate income tax payable by charging the rate on a smaller taxable base.

The countries of the region considered in this study generally include such incentives in their tax legislation, although there are differences in the deductions and amortization rate allowed. Argentina's legislation allows amortization of all capital invested over three years, together with a depletion deduction and a special environmental allowance.

Tax legislations in Bolivia, Mexico and Peru allow the deduction of all development expenditure during the year in which it is incurred, together with exploration and feasibility expenses during the year in which production starts. The difference between amortization regimes in these three countries relates to the treatment of capital invested in machinery and equipment. In Bolivia, amortization takes place over a minimum of eight years, in Mexico 10 years, and in Peru over a five-year period.

In Chile, most heavy machinery is amortised over a three-year period, with exploration and feasibility expenses fully chargeable in the year in which production begins. Development expenses are amortised over one-third of the project's estimated life.

The tax regimes prevailing in Brazil and Venezuela lead to taxable profits arising sooner than in the other countries, as can be seen in figure 5. This is explained by the longer amortization periods, and by the mechanism for carrying forward accounting losses, which only lasts for three years in Venezuela and in Brazil is limited to 30% of net taxable income. Like Argentina, Brazil includes the depletion of mineral reserves in its permitted deductions.

Argentina, Bolivia, Chile, Mexico and Peru also offer the possibility of carrying losses forward into subsequent tax years. In Bolivia, Chile and Mexico this is unlimited, but Argentina and Peru set limits of five and four years respectively. In Peru, the limit can be extended in the case of projects with long maturity periods. The limit reduces the benefits of accelerated amortization, by reducing rates of return on projects involving large capital investments in the initial stages, since it prevents the firm from taking full advantage of all the deductions allowed.¹⁸

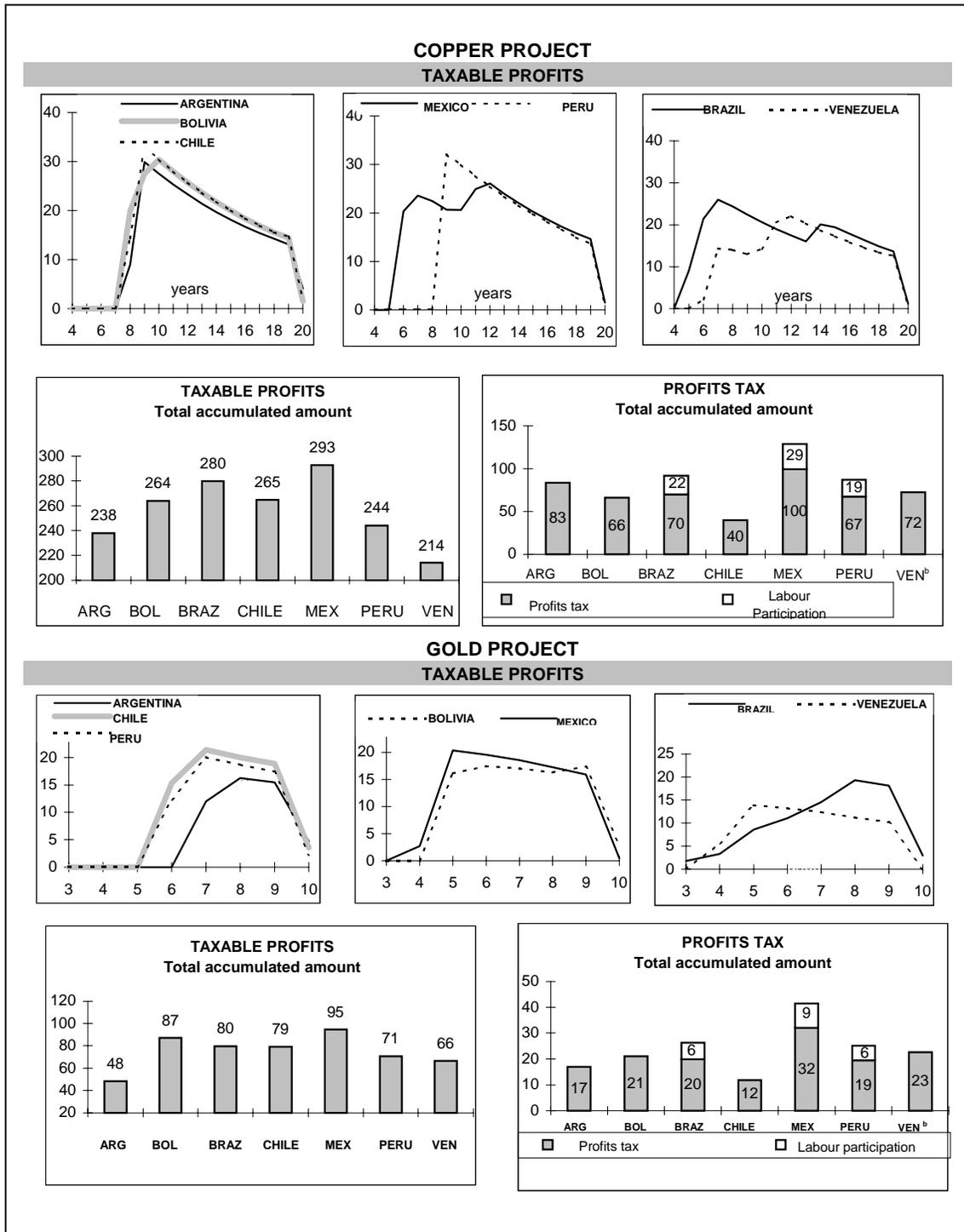
In Argentina, Chile, Mexico, Peru and Venezuela, any taxes that are not dependent on economic results are deductible from the tax base. These are not significant in Chile and Mexico, however, where the bulk of all taxes paid are levied on companies' earnings. In Bolivia and Brazil, the only exception is the tax levied on loan interest. In Bolivia, royalties are complementary to profits tax, while in Mexico and Peru asset taxes are non-deductible.¹⁹

In brief, deduction mechanisms have a decisive influence when the enterprise starts to pay taxes on profits. Figure 5 shows that the gold model generates profits tax payments as from the third year in Brazil, the fourth in Mexico and Venezuela, and in the fifth in Bolivia, but only starting in the sixth year in Chile and Peru and the seventh in Argentina. In the copper model, taxable profits appear in Brazil as from the fifth year, in Mexico and Venezuela from the sixth, in Argentina Bolivia and Chile in the eighth, and in Peru starting in the ninth year.

¹⁸ In the Peruvian case, the four-year limit is sufficient to write off all losses from previous tax years in the gold project model. In the copper project which is of longer maturity, the deadline needs to be extended for an additional year. In the case of Argentina, the five-year limit is sufficient to complete the write-off of all previous losses in gold, but not in copper.

¹⁹ In Argentina, the tax on interest payments is 13.2%, in Brazil it is 15% and in Bolivia 12%; however, the rates can be lowered in these countries in the context of bilateral agreements. In Chile the rate is 35%, but a reduction can be requested taking it down to just 4%. In Mexico the rate is 15%, reducible to 4.9% in the case of bilateral agreements. In Peru the rate is 1% if the loan comes from abroad and has a rate of interest no higher than Prime Rate plus 6% or LIBOR plus 7%. If the interest rate is greater than this, then a 30% tax is charged on the difference.

Figure 5
TAXABLE PROFITS AND PROFITS TAX^a
(US\$ million discounted at 12%)



Source: ECLAC, based on Colorado School of Mines op.cit., and official information on the tax regimes of Latin American countries.

Notes: ^a Only taxes levied directly on accounting profits are considered, including mandatory worker profit sharing where relevant. The tax on dividends paid in Bolivia and Chile was not taken into consideration. ^b The labour share was not considered since it is not calculated as a percentage of profits, but measured in terms of days' wage

V. Factors underlying the performance of investments in the mining industry

A. What makes mining competitive

Investors in the mining industry are highly sensitive to internal factors that determine competitiveness, which they see as the ability to capture an increasing proportion of world transactions (market share) by supplying more and more dynamic markets (positioning).

Given that mining involves the exploitation of a natural resource, competitiveness depends on a company's ability to explore existing potential, by developing proven, feasible and possible reserves, which are susceptible to being brought into profitable production. The concept of an "economically feasible" mineral reserve is a relative one, since it depends not only on the estimated costs of ore extraction and processing, but also on international prices.

One of the basic aims of public policy should be to create conditions to encourage investors to channel the maximum possible resources into exploration. Investors, for their part, should apply the best exploration techniques available on the market, focusing on the geological targets showing the greatest potential and making use of basic information provided by the geological service authorities.

A country providing advanced geological services will be more attractive to investors and therefore in a better position to negotiate its available resources.

Peru, for example, is a country that has not been fully explored, and, in fact, only an estimated 10% of its actual potential is currently being exploited. Chile, on the other hand, has been widely explored, to such an extent that its boom in exploration has developed into an investment bonanza over the last few years; Peru, meanwhile, is still going through the first of these stages.

It is worth considering the relative amounts that different countries spend on exploration in order to determine their long-term share and positioning in worldwide production and trade.

A mining project begins with the identification of a feasible geological target, but does not finish when the target's useful life comes to an end. Mining companies need to carry out exploration activities on an ongoing basis in order to guarantee their useful life as organizations; thus, over time, they will expand or close down several geological targets.

Mining competitiveness clearly depends on natural factors such as the availability, quality or grade of ores, mineralogical types, and geographical location, all of which affect access costs and environmental impact. Other factors include the availability of infrastructure and related services (highways, ports, energy, communications, urban development, etc.).

Other factors affecting competitiveness include: facilities for/or restrictions on the exploration and exploitation of mineral resources; the macroeconomic situation; the level of entrepreneurial and technological know-how; the availability and quality of labour; and the nature of existing social conflicts,

There is a dynamic interrelationship between the prevailing natural conditions and the degree of stability in a country, which causes competitiveness to vary over time. Experience has shown that there are good times and bad times for the mining industry, although propitious times for entrepreneurs do not necessarily coincide with government timeframes or expectations.

Mining competitiveness suffers from short-term rigidities, since it takes time to explore potential; moreover, the location, volume and quality of natural resources cannot be changed. Whether an investment project is feasible or not depends on both local (country-risk) and exogenous (supply and demand) factors, all of which affect investors' choices and decisions.

Mining also has certain peculiarities that affect competitiveness, such as the "sunk cost" of the initial investment needed to open a mine or build a processing plant; apart from this there is the length of time it takes for investments to come to fruition. Moreover, it is not the main product alone that determines whether or not an operation is feasible. Deposits usually contain a number of commercially extractable ores, all of which are taken into account in calculating a project's rate of return.

All the above distinguishes mining from other activities where competitiveness can be estimated on the basis of pricing policies and product differentiation. Prices are not susceptible to manipulation by producers, although short-lived cartels have been formed from time to time. Mining products are usually sold under long-term arrangements, with processing levels being based on internationally accepted prices.

Market prices may be impacted by endogenous events (discovery of new deposits, new technologies, technical problems and labour stoppages, etc.) and by factors that are exogenous to the industry (changes in the consumption patterns and investment policies of user industries; sale of strategic stocks, wars, natural disasters, etc.).

Investors in the mining industry tend to pay special attention to the spread between costs and international benchmark prices, as this reflects the positioning they are likely to achieve on the world market. Companies that are able to increase this margin and influence production costs will be less vulnerable to fluctuations in the market.

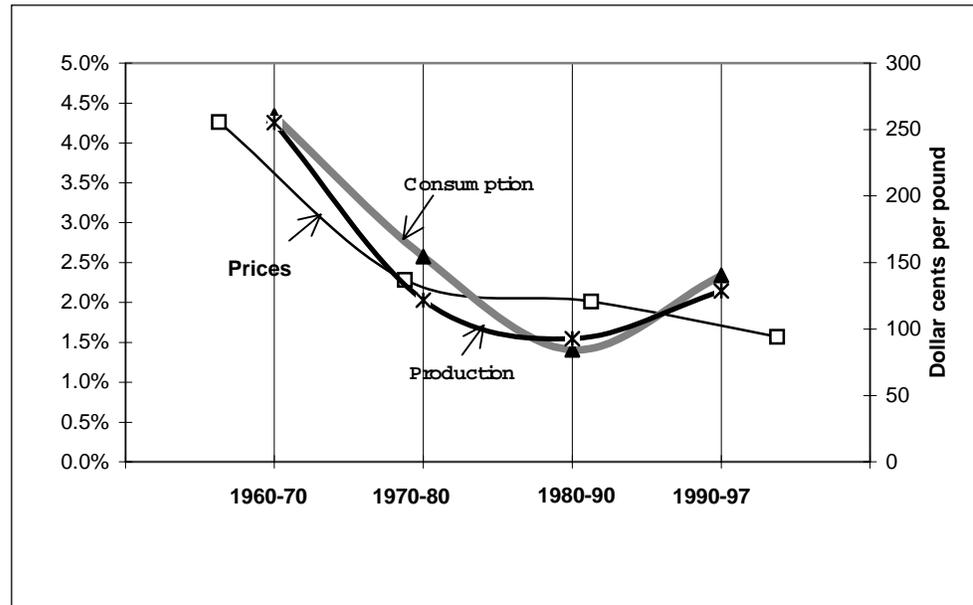
It is well known that world demand for metals is cyclical, and this affects companies' positioning, such that high-cost producers only make profits when demand is buoyant and prices are high. In this situation, operations may be halted, either permanently or temporarily, or rates of return may only be sufficient to cover maintenance costs. This can affect the way mines are exploited; for example, when preference is given exclusively to high-grade mineral seams, and deposits are skimmed, to use the industry term.

Investments in the mining industry are long-term undertakings which mature slowly and are affected by the construction of new (greenfield) facilities; by supply and demand expected over time (brownfield) and by the expansion and performance of old (redfield) operations. What is not done at one particular moment may be postponed for a long time, which makes mining a highly complex activity.

B. Factors arising from international market conditions

For obvious reasons, factors arising from international market conditions have far-reaching effects on investment decisions. The world market for mining products, which is a more or less managed one, has succeeded in maintaining a close correlation between production growth and the expansion of demand. Gaps can occur, however, for various reasons especially in the case of precious metals, which can be prone to speculative manipulation.

Figure 6
COPPER: CONSUMPTION, PRODUCTION AND PRICES
(world growth rates and actual prices 1990)



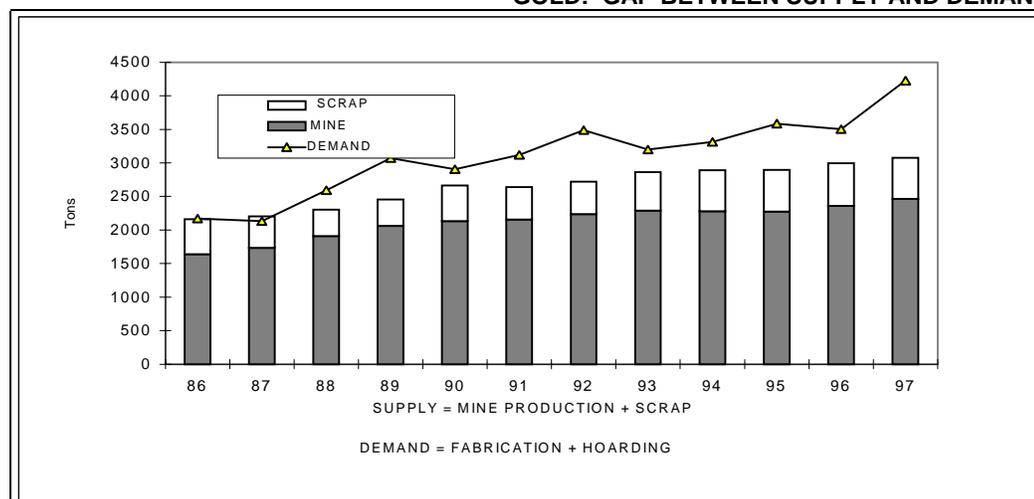
Source: ECLAC, based on Metallgesellschaft Aktiengesellschaft, World Bureau of Metal Statistics and World Bank.

In the case of copper, production and consumption have grown at similar rates over the last thirty years 2.03% and 2.57% respectively in the 1970s; 1.55% and 1.41% during the 1980s; and 2.15% and 2.34% between 1990 and 1997. In most recent of these periods, production was increased to meet an anticipated increase in consumption.

In the case of gold, mining output has not kept pace with demand for several decades, the gap being covered by recycled gold, sales of official reserves, and futures. In 1997, for example, mine production fell short of worldwide demand by 1,790 tons (production of 2,464 tons versus world demand of 4,254 tons). In this case, the shortfall stimulated exploration for new gold deposits.

When consumption trends upward and price and cost projections show a potential for healthy profit margins, exploration activities increase and investors search for new projects. Mismatches between supply and demand can occur, however, as a result of mines reopening which had been closed down when prices were lower, or because of the stronger incentives that exist for recycling when prices rise, or the unexpected sale of stockpiles. Since prices fluctuate and projects take a long time to mature, average prices are usually projected on the low side throughout the useful life of a mining operation.

Figure 7

GOLD: GAP BETWEEN SUPPLY AND DEMAND

Source: Eclac, based on Gold Fields Mineral Services Ltd., *Gold 1998*

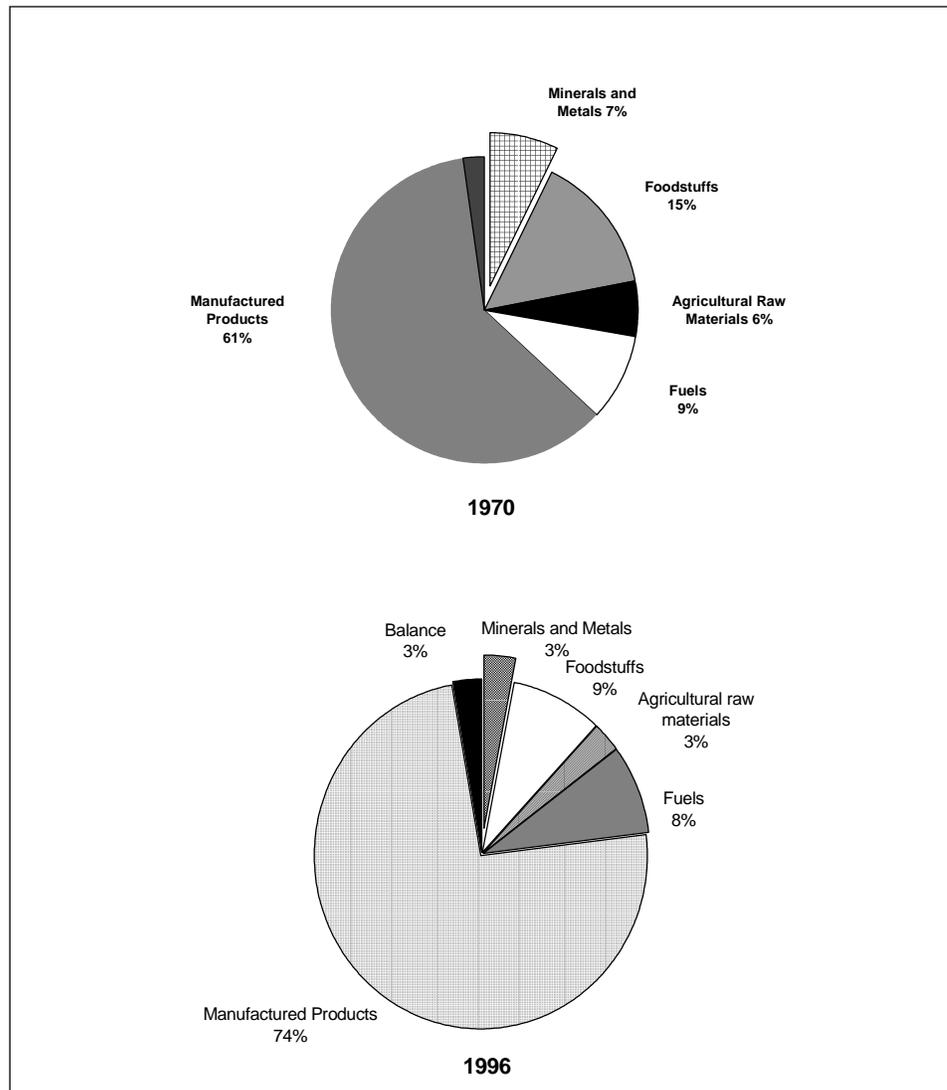
Future investment decisions are subject to a number of vulnerability factors. Over the last three decades, the share of mining products in world trade has fallen steadily, and, while consumption growth in the industrialised countries has slowed, consumption in the Asian countries has risen and prices have fallen in real terms. The recent Asian crisis has been particularly serious in this context, and has caused a number of mining projects to be postponed.

International trade in minerals and metals, which accounted for 7% of world export value in the early 1970s, has declined steadily since then to a 5% share in the early 1980s, 4% at the end of that decade, and just 3% during the 1990s. Market price fluctuations have undoubtedly played a part in this decline.

The bulk of the region's mining production is exported to markets outside Latin America and the Caribbean, as metal consumption is clearly related to a country's degree of industrialization. Among developing countries, Latin America has not been a major contributor to demand growth,

given the small size of national markets, the depression that affected most of the region's economies in the 1980s, and the still low average growth rates of the 1990s.

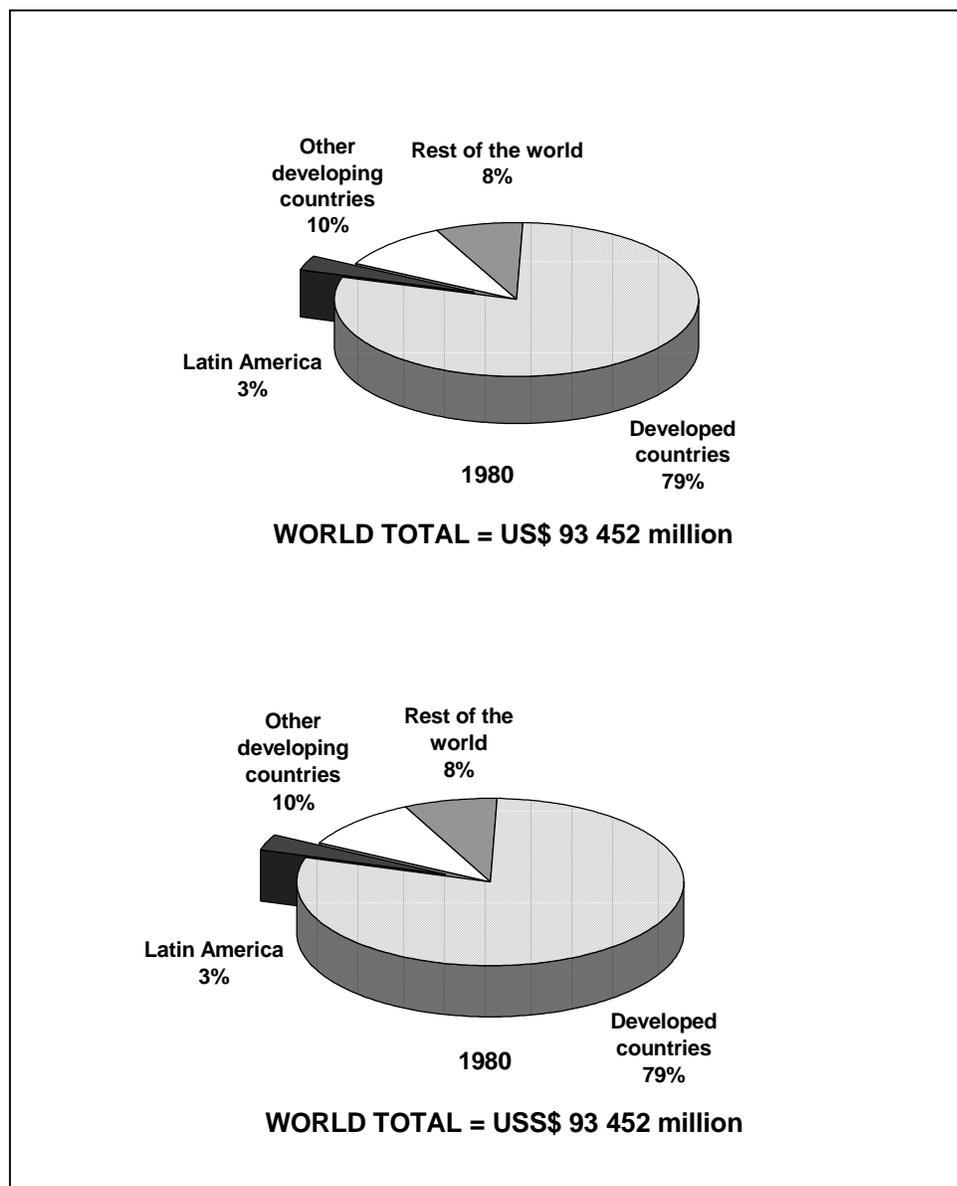
Figure 8
WORLD EXPORTS BY KIND OF GOODS



Source: ECLAC, based on *U.N. Monthly Bulletin of Statistics*

Figure 9

WORLD CONSUMPTION OF MINERALS AND METALS



Source: ECLAC, based on U.N. Monthly Bulletin of Statistics

World mineral and metal consumption expanded from US\$ 93 billion to US\$ 161.6 billion between 1980 and 1996. While the share of developed countries fell from 79% to 65%, Latin America and the Caribbean accounted for just 3%, whereas other developing countries increased their share from 10% to 24%. The remainder was absorbed by the former Soviet Union and the countries of Eastern European.

The slowdown in the growth of consumption in the developed countries can be explained by the technological changes of the last few decades, which have spawned substitutes and given rise to a smaller metal content in the products made by user industries (miniaturization). This trend seems to have come to an end in some industries, however, so the percentage of metals used in production processes can be expected to stabilise.

In the case of refined copper, the average annual growth of consumption in developed countries (1.82%) was lower than the world average (2.34%) between 1990 and 1997. By contrast, the average rate of consumption in the recently industrialised Asian countries was 11.83% in the same period. Experience has shown, however, that as industrialization advances, consumption growth rates tend to stabilise at lower levels.

The buoyancy of the United States economy during the 1990s, however, generated higher average copper consumption in the developed world in 1990–1997. Average consumption of copper in the United States grew faster (3.83% per year) than in the world as a whole (2.34%), and the same was true of aluminium, where 2.98% growth in the United States contrasted with a world average of 1.53%. Average lead consumption in the United States grew at a rate of 4.46%, while the world average was 1.20%.

Table 3
CONSUMPTION OF SELECTED METALS: GROWTH RATES, 1990–1997

	Annual average growth (Percentages)		
	Aluminium	Copper	Lead
Developed Countries	2.29	1.82	1.08
United States	2.98	3.83	4.46
World Total	1.53	2.34	1.20

Source: ECLAC, based on World Bureau of Metal Statistics

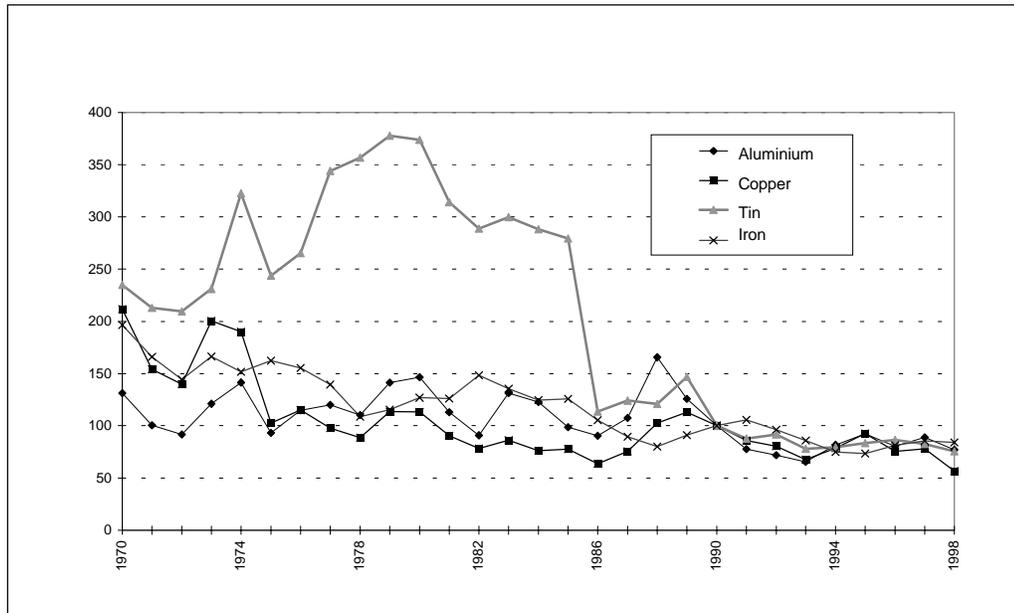
Although future growth in mining exports will continue to be aimed mainly at developed countries, it will also have to rely on higher demand from developing economies.

Throughout the 1990s, the competitive position of mining products has deteriorated, as the prices of the main products have fallen steadily. Taking 1990 as the base year, the prices of all the main mining products had dropped sharply in real terms by 1998, except for silver, which had risen by 10%. The steepest falls in real terms during this period were nickel (50%), copper (40%), lead (37%) and zinc (35%). Other products fell by smaller percentages, such as iron (7%), aluminium (20%), and tin (15%).²⁰

While positioning, consumption and price indicators measure mining companies' vulnerability, market-share figures reflect the impact of investments on supply and international transactions. Over the last 25 years, Latin America has increased its contribution to world output of the main mining products, and has obtained rising market shares.

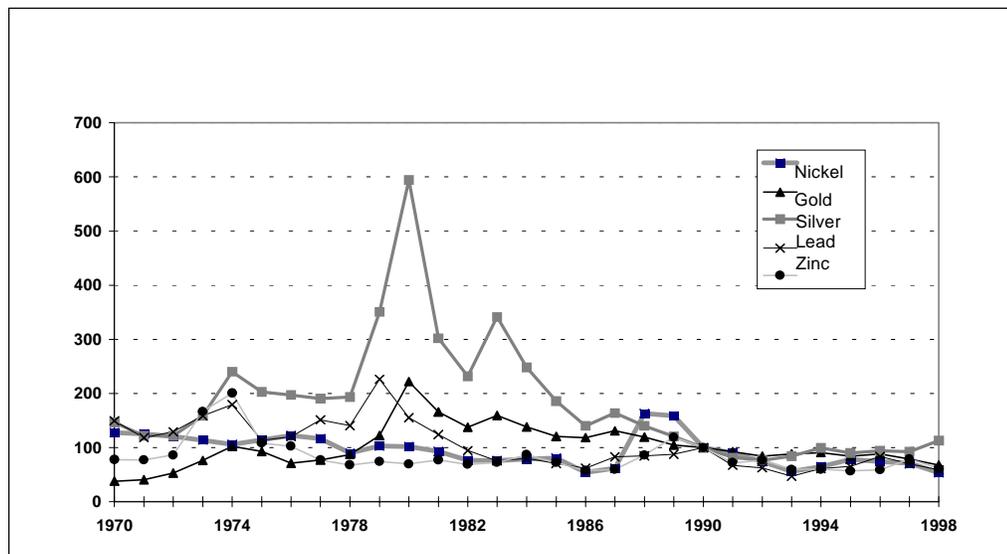
²⁰ Prices have been deflated by an index of unit dollar values of manufacturers exported to developing countries by the five largest industrialized countries of OECD (France, Germany, Japan, the United Kingdom, and the United States). World Bank, *Commodity Markets and the Developing Countries*, November 1998.

Figure 10
ACTUAL METAL PRICES 1990
 (base index 1990=100)



Source: ECLAC, based on UNCTAD and World Bank.

Figure 11
ACTUAL METAL PRICES 1990
 (base index 1990=100)

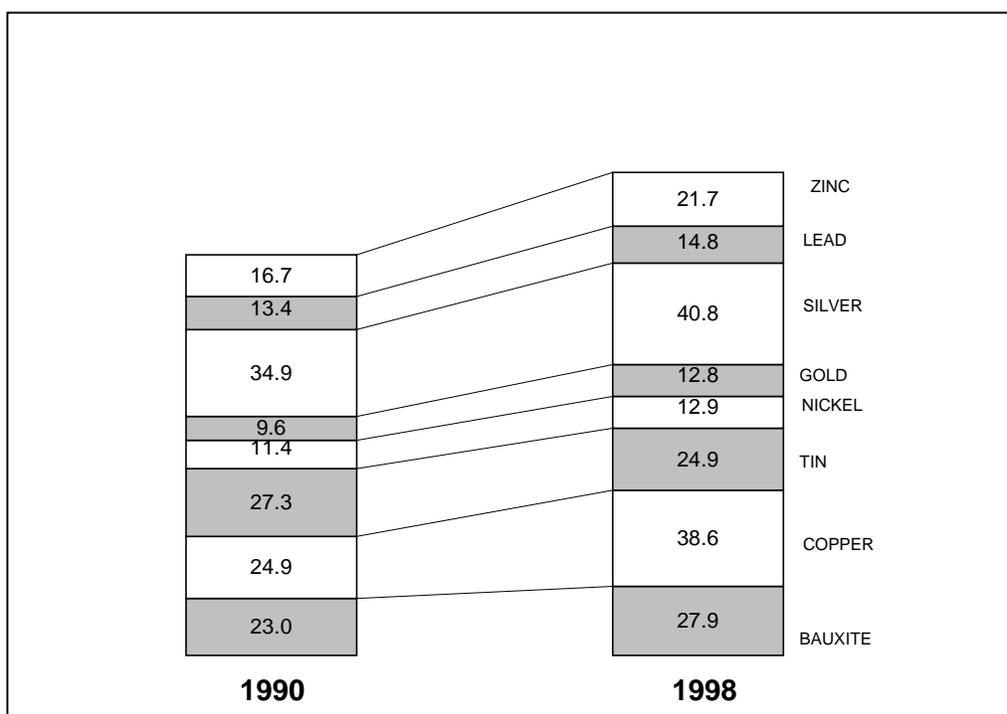


Source: ECLAC, based on UNCTAD and World Bank.

As a result of falling prices in real terms, Latin America today is producing more but earning relatively less and this affects the purchasing power of mining exports.

Between 1990 and 1998, Latin America's share of world copper output grew from 25% to 39%, while its contribution to zinc production rose from 17% to 22%, and its share of bauxite grew from 23% to 28%. Over the same period of time, its contribution to world gold production rose from 10% to 13%, and lead from 13% to 15%.

Figure 12
LATIN AMERICA: WORLD MINE PRODUCTION SHARING

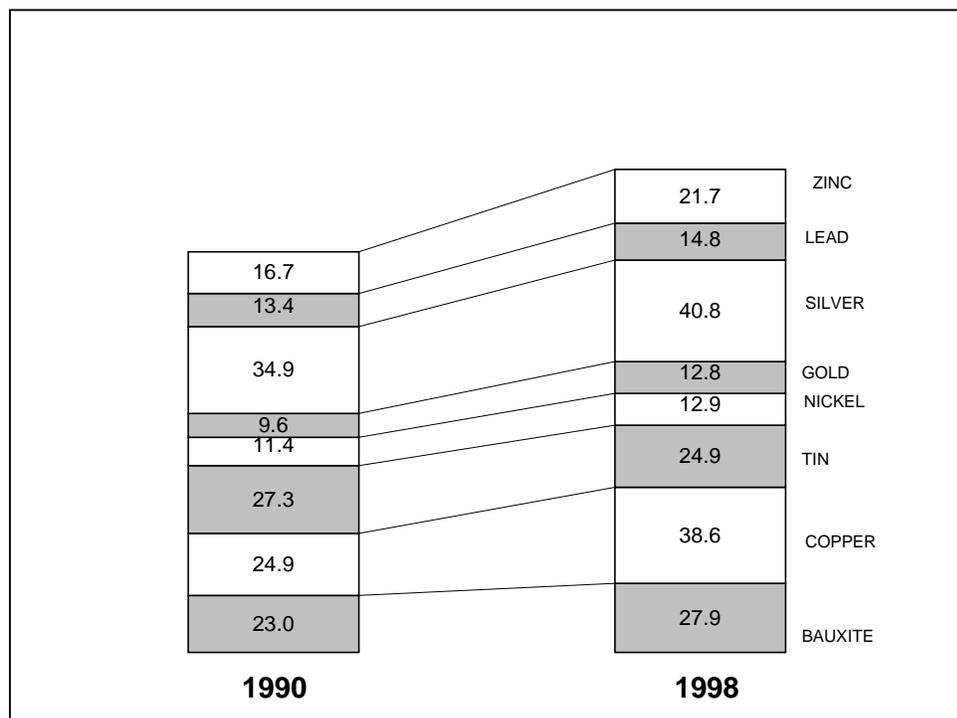


Source: ECLAC, based on Metallgesellschaft Aktiengesellschaft and World Bureau of Metal Statistics

Over the same period, Latin America also increased its share of the production of most items in the refined product category, except for lead and tin.

However, unlike what happened in the 1970s and 1980s when the trend was toward an increasing share of higher value-added products in world exports, in some cases the 1990s saw a decline and in others a relative stagnation, due to the propensity of companies to invest in concentrates to satisfy their extra-regional smelting and refining capacities, in many cases including intra-firm transactions or long-term purchase commitments, linked to project financing or long-term purchase commitments, linked to project financing.

Figure 13

LATIN AMERICA: REFINING WORLD PRODUCTION SHARING

Source: ECLAC, based on Metallgesellschaft Aktiengesellschaft and World Bureau of Metal Statistics

C. Technological changes

Technological changes have been very important in the new role being played by foreign investment in the region's mining sectors, by cancelling out some natural advantages and opening up others.

Competitive advantage based on high-grade ores, is an important factor, but not sufficient on its own: equally, and perhaps more relevant is the maintenance of high productivity. This has led to substantive changes in corporate strategies, aimed at modernising installations, reducing operating and labour costs, closing down marginal operations, and carrying out administrative and financial rationalization.

For some time now, exploration programmes have been incorporating technological advances such as satellite imagery for better targeting of exploration zones, while exploitation programmes have given priority to open-pit operations with low investment and operating costs, such as hydrometallurgy, and the use of continuous smelting in pyrometallurgy processes; the installation of larger and more efficient equipment in mines and plants; the use of grinding plants inside the mines; and modern mineral transport alternatives such as large trucks, mineral ducts and belts.

Large potential investors tend to put special emphasis on long-term planning in order to increase productivity on a sustained basis and reduce their global operating costs. This affords them greater protection from cyclical phenomena affecting price stability.

When selecting investment alternatives they pay special attention to the position of projects on the long-term cost curve. If a project is in the lower cost quartiles, the expected return is more

secure, because, ultimately, the long-term cost curve is linked to future price behaviour over the same period of time.

As discussed later, copper and gold have been the metals most favoured in the investment decisions of the 1990s. In the case of copper, foreign investors seek projects whose direct operating costs, covering everything up to the stage of refined product placed on the market, less credits relating to subproducts, and excluding depreciation and financial expenses, are below US\$ 0.50/lb.

In fact, by century's end, it is estimated that up to 45% of world copper production should be carried out at lower cost levels. This is one of the reasons why the search has intensified for deposits susceptible to treatment through processes such as hydrometallurgic leaching, solvent extraction and electrowinning, due to their lower cost and less polluting side-effects.

Technological changes, including heap leaching and bio-leaching for refractory ores have produced a radical change in gold mining since the 1980s, making it profitable to exploit ores that were not previously economically feasible. These changes, together with progress in excavation and material-moving technologies, have made it possible to work surface deposits more cheaply than underground mines, where depth requirements substantially raise costs.

The exhaustion of certain mines that use leaching in the United States, together with the closure of high-cost mines as a result of depressed gold prices, stricter environmental regulations in Canada, and high operating costs in South African mines, are among the factors that have stimulated the search for gold deposits offering good geological potential for open-pit projects in Latin America.

Large-scale investors seek ore bodies with a minimum content of one million ounces and a grade better than 0.5 grams/ton, as lower quality projects will produce marginal rates of return.

In both copper and gold, the investment strategy pursued by large mining companies is to concentrate on developing large high-quality ore bodies in districts where other deposits can be found to replace worn-out reserves, for which they either acquire the mining rights or carry out new exploration and prospecting directly.

D. Internationalization of environment issues

Environmental issues increasingly transcend national borders, and strong pressures are exerted not only by a variety of civil society organizations and government institutions, but also by private and international lending agencies. Environmental groups have considerable pressure-exerting capacity, with the 10 most important environmental pressure groups in the United States each having an annual budget in excess of US\$ 253 million (Hobson, 1993).²¹

Mining activity is only possible where the ores are located: there is no alternative to this. The industry clearly affects the environment in which it operates, with an impact measured in terms of changes, either positive or negative, caused to substantive variables of the surroundings.

What is important is to minimise negative impacts as far as possible.²² The available technology is increasingly large-scale, but environmental management involves costs that depend

²¹ Hobson, Simon (1993), "The 1990s: The environmental decade", *Engineering and Mining Journal*, vol. 194, No. 1, January.

²² The mining industry has a potentially negative environmental impact on water arising from the discharge of polluting liquid effluents, and on the atmosphere because of the dust particles and gas emissions it produces. Apart from this, mining activities generate solid wastes and noise, and blasting causes vibrations in the earth's crust. The environment may suffer physical changes arising from the installation of the industry itself (degradation of soils or deforestation, for example). Apart from all this, mining activities also have a potential socioeconomic impact, especially on traditional societies, because of the sudden appearance of large-scale economic activity which usually attracts significant levels of migration to surroundings that may not be prepared for it. This

not only the application of techniques, but also on the stringency of the regulations. Environmental regulations in Canada, for example, impose an estimated additional cost of US\$ 20 per ounce in gold mining projects (Nichols, 1993).²³

Environmental impact studies are crucial for obtaining project funding. Investors therefore have to make appropriate environmental risk management an essential part of their corporate strategy, and this also includes maintaining harmonious relations with the entire surroundings, natural, social and cultural. If these variables are in conflict, investors may rule out otherwise valid investment projects.

In general, the greatest environmental problems occur in old mining operations, where environmental modernization would require major expenditure. For that reason reinvestment initiatives in this type of operation sometimes encounter rigidities. In the light of Chilean experience, companies involved in megaprojects in the region have generally been more rigorous in addressing environmental issues than the regulations actually require them to be.

Nowadays, permissive regulations are not viewed as a positive factor for attracting investments, although it is true that many investors from Canada and the United States have sought out business opportunities abroad because of environmental pressures. Moreover, the growing internationalization of environmental issues means that international trade is seen as a propitious field for standardising sustainable productive practices.

In general, Latin American countries have been adopting environmental standards that are very similar to those that exist in developed countries, although their application has had to be gradual in view of the circumstances. Investors themselves have often worked with government authorities in drafting environmental regulations in Chile and Peru, for example.

Little by little, environmental standards and practices with a foresight approach have become part of the framework of legal security that foreign investors demand.

E. The global strategies of mining companies

Mining companies are not exempt from the ongoing process of globalization represented by the worldwide diffusion and projection of the market paradigm, interdependence and inter-penetration of markets, greater mobility in resource allocation, increasingly fungible natural advantages and mass diffusion of technical progress. Globalization, or, to be more precise, the adoption of global strategies, is not a recent phenomenon in mining, however.

Large companies, which control an increasingly large fraction of the region's mining activities, manage a world-scale competitive advantage and optimise their integrated profits by taking location factors into consideration so as to minimise operating costs. Their transactions are carried out essentially in intra-firm circuits or on the basis of supply contracts with consumers, which are generally of a long-term nature.

Global strategies involve seeking profits from cost reduction, specialization, security and stability in provision, and flexibility of supply, all of which contribute to greater competitiveness.

The characteristics of mining products and their marketing patterns adhere to globally accepted standards rather than depending on unilateral conditions established between buyers and sellers. As mentioned above, mining is a "price-taking" activity, where competitiveness depends on the capacity to exploit the margins between international prices and production costs.

can lead to the disappearance of other productive activities, the loss of landholdings, changes in cultural values and forced emigration, among other things.

²³ Nichols, Jeffrey A., (1993), "*Invertir en oro: el boom de los noventa*", Mc Graw-Hill Management Series.

Apart from natural advantages, which are essential but not necessarily decisive, investment decisions are also affected by any aspect or tool of national policy that affects production costs. The interests of the companies and investment recipient countries converge when the competitive factors promoted by governments coincide with companies' global strategies, thereby ensuring that cost management leads to an increasing market share.

This convergence also determines whether or not those strategies give increasing preference to a given location. Investment flows thus determine degrees of specialization, the sustainability of which over time is uncertain and dependent on the erosion of natural advantages caused by technical progress.

Coordination between global strategies and the interests of those with natural potential is subject to the dynamics of the world market, which depends not only on world business cycles, but basically on technological changes in consumer industries.

Mobility within value chains depends not only on natural advantages but also on transformations that are exogenous to the investment recipient country. Mining companies use a global perspective when choosing which mines to exploit, and combine a variety of mineral supply and processing alternatives, ranging from concentration plants, concentrates that are sent to smelting plants, smelted minerals sent to refineries; and refined metals supplied to industrial consumers to be turned into semi-manufactures.

Within these circuits, which are dominated by a variety of intra-firm relations, the more highly processed (refined) products have access to more competitive markets consisting of industrial consumers, whereas products with low levels of processing and varied composition have access to oligopsonistic markets.

The trend in the 1990s, particularly in the case of copper, has been for the countries of the region to export not only products with low levels of processing to supply refineries abroad, but also refined products that are placed on industrial-consumer markets.

It is difficult to express a firm opinion on the best place for local production to be on the value scales managed by globalise companies. This is a function of market situations and the spread between prices and costs that depends on highly variable circumstances. The most attractive margins between costs and international prices are not necessarily always in the most highly processed market segments.

There are a variety of mining operators in the region occupying very different positions on the value chain. These range from subsidiaries that coordinate with their parent companies through intra-firm transactions; local private-sector companies that usually do not have their own marketing channels and so operate through traders; State-owned companies that may have their own channels or else use traders; commercial intermediaries who buy directly or under back-to-back arrangements; and agents who buy on behalf of consumers.

A variety of mining operators take part in investment initiatives, either by becoming directly involved in the projects themselves or else make purchasing commitments that assure funding. Mining companies sign long-term marketing agreements that are renegotiated with contractually established frequency and these usually leave a small fraction of the mineral available for short-term sales or for occasional customers.

The interesting thing about mining is that every investment initiative ultimately has a committed market, but the degree of processing that result from investment projects tends to vary according to the players involved.

Not all mining companies operating in the region are able to adopt global strategies, but those that are unable to do so tend to have links with globalised enterprises of one sort or another. This tends to favour the lowest-cost mineral deposits worldwide, which implies flexibility to change supply positions.

This is what distinguishes public-sector enterprises created specifically to exploit national mineral wealth and which have limited access to foreign resources. For many government authorities it would not make sense for a public-sector company to close down operations in its country of origin and move elsewhere in order to improve its operating margins.

F. Political stability and legal security

Investors value political stability and legal security very highly. Political stability implies rules of coexistence that do not undermine agreements built into the constitution and that include mechanisms to guarantee investors' rights. Ultimately, this is a question of the rules of the game respecting the rule of law, free from arbitrary action by the authorities. Such conditions serve as a framework for guaranteeing the legal stability of any mining rights granted.

The increasing predominance of democratic regimes has definitely provided investors with greater political stability, together with equal treatment between national and foreign investors, as discussed above.

Mining reforms, for their part, have aimed to guarantee the security of mining rights and modernise concession regimes. There has been a tendency to strengthen institutions, since the outcomes of mining policies largely stem from the attributions of the agencies responsible for implementing them, and their technical and administrative capacity.

Major progress has been made in national geological services; in the modernization of concession records; in establishing mining cadastres; and in general, in procedural aspects aimed at reducing the level of discretionary action. This has made it possible to increase endogenous capacity for administering mining resources and give more effective guidance to investors.

Attempts have also been made to centralise dealings with potential investors, to avoid the dispersion and duplication of functions, and to improve information and the granting of mining rights, making these as transparent as possible.

The existence of policies based on free prospecting, sampling and exploration, while respecting existing rights, has made possible a substantial increase in investment in mining exploration, and this has led to improved knowledge of existing mining potential.

Inefficient concession-awarding procedures have been steadily overcome, by establishing mining cadastres that reduce the risk of disputes arising from overlapping rights. Moreover, a concessions market has developed in practice, based on the free transfer of mining rights, thereby guaranteeing investors greater mobility.

In summary, the removal of entry barriers, particularly in terms of improved administration of mining rights; the abolition of areas reserved for the State; and the full exercise of discovery rights, together with freedom to market the resulting products, have led potential investors to view Latin America as a favourable location for their operations.

G. Country–risk conditions: macroeconomic health and policies that favour mining

It is not the purpose of this paper to review the macroeconomic changes that have occurred in the countries of the region. Suffice it to say that macroeconomic factors can either promote investment or discourage it.

Some indicators predict slower growth in Latin America, stemming from its vulnerability to developments in the world economy, especially those arising from the Asian crisis. While in 1997 the GDP growth was 5.2%, in 1998 the rate had fallen to just 2.3%, compared to an average of 3.2% for the entire 1991–1996 period. At the same time, however, impressive efforts have been made to reduce inflation, which in 1997 and 1998 averaged just 10%, its lowest level for 50 years.

Nonetheless, there are worries about the potential effects on future growth in the region arising from events in both developed and emerging economies, especially the newly industrialised Asian countries; earnings from mining exports have already been harmed by the collapse of international prices. Fluctuations on international financial markets also have significant effects, given the sizeable current account deficit on the region's balance of payments, which grew from US\$ 46.8 billion in 1997 to around US\$ 49.8 billion in 1998.

The Preliminary Overview of the Economy of Latin America and the Caribbean published by ECLAC in late 1998, issued a warning about the challenges facing the region's economies. These mainly involve the problems of maintaining a dynamic growth rate, in conditions of uncertainty not only about the prices of our primary export products on world markets, but also interest rates and foreign capital flows.

Lower demand and a consequent weakening of international prices have caused a series of mining projects to be postponed, particularly in copper, although the momentum of investment in gold mining seems to be sustained by the low cost of investment projects in some of the region's countries (Peru and Chile).

The way in which these events may affect mining–related economic instruments is uncertain, as the reforms implemented during the 1990s have generally given rise to policies that are favourable to mining development. Economic stability and the management of trade, exchange rate, taxation, financial and other economic–policy tools are crucial to a favourable environment for mining investment, since companies are highly sensitive to their impact on production costs.

From the commercial standpoint, investors reject restrictions on their freedom to market their products. When State monopolies are set up to handle foreign trade in mining products the result is a sharp contraction in foreign investment, as seen in Peru for example. Investors also do not agree with the setting of higher levels of tariff protection, since that undermines the chances of maintaining the provision of inputs and equipment at competitive prices. In that sense, tariff reform –to reduce tariff dispersion and discrimination and eliminate non–tariff barriers, thereby stimulating competition from abroad– has served investors' interests.

Investors are highly sensitive both to foreign–exchange controls and exchange–rate appreciation, as the former restrict the mobility of capital flows arising from their financial operations and also discourage exports, while the ensuing exchange–rate misalignments push up production costs as export proceeds lose domestic purchasing power.

Mining companies do not approve of their competitiveness being undermined by exogenous factors, such as disruptions to supply conditions or currency misalignment. Investors demand a stable exchange rate reflecting the country's foreign trade currency basket, which moves relatively independently of short–term circumstances and is not distorted by short–term capital inflows.

As regards infrastructure services (including ports and energy), investors believe there should be freedom of contract. In this context, port and energy market reforms have led to lower transaction costs, which has had a favourable impact on cost control generally. What characterises mining companies, as “international price takers” is their inability to pass on to product prices any cost overruns generated by economic policy.

The way tax policy is designed is a fundamental issue. Investors believe a distinction should be made between the prospecting and exploration stages –when there is no income but only expense– and the commercial exploitation phase.

They argue that prospecting and exploration should not be taxed, which means no tariffs or domestic taxes on equipment imports, nor other taxes levied on domestic purchases or the hiring of services. They also argue for existing tariffs and taxes to be lifted directly or else reimbursed under the drawback mechanism.

In the commercial exploitation phase, their preferred tax policy involves paying taxes on the outcome of their annual cash flow. Taxes on transactions (VAT, taxes on sales, rents and royalties) are blind, and are seen as adding to production costs independently of market conditions. Mining companies are also keen to establish a reinvestment incentive to encourage exploration, or to expand and modernise installed capacity, with taxes being levied only on distributed profits.

Mining companies are also highly sensitive to the scheme of deductions from the tax base. They argue for mining exploration and development costs to be deductible from the tax base in the commercial exploitation phase, and for depreciation to be as rapid as possible in order to keep taxes to a minimum in the initial years.

Apart from this, they consider that there should be a scheme for reimbursing domestic taxes in this phase, but they do not agree with the idea of setting up compulsory worker profit-sharing schemes, which in practice are seen as a profits–tax surcharge.

Financial market liberalization, particularly the abolition of restrictions on raising loans abroad or on the use of domestic credit in the case of foreign companies, together with the lifting of limits on profit repatriation, have significantly improved conditions for investment in mining activities.

Most foreign investment is financed by loans from abroad rather than with internal capital injections; these are normally linked to future sales commitments signed with consumer industries, and are used in negotiations with the banks.

VI. Mining investment in the 1990s

In the first half of the 1980s, Chile carried out a major reform of its mining regime in order to promote foreign investment, and this rapidly led to increased investment in exploration by large mining companies looking for copper megaprojects, which began to come to fruition in the late 1980s and during the 1990s.

This is what distinguishes Chile from the other countries of the region. Whereas in the 1990s Chile was able to harvest the fruits of its major exploration expenditure during the previous decade, and displayed great investment dynamism, in the other countries an exploration boom was just beginning. The execution of investment projects arising from this could be delayed; however, because of the Asian crisis, or if the slump in international prices is long lasting. Brazil is a special case, where Companhia Vale Do Rio Doce has played a highly active role both in mining exploration and in setting up joint ventures with foreign investors.

A. Investments in exploration

There are no statistics available for analysing investments in exploration. One can gain an approximate idea of the pattern of such investments, however, on the basis of exploration budgets or expenditure plans published in the annual survey carried out by the prestigious Canadian consulting firm Metals Economics Group.²⁴

²⁴ The figures presented in this section originate from the annual survey of the exploration budgets of the world's main mining companies carried out by Metals Economic Group. There is no known statistic that measures expenditure actually carried out. But

In the early 1990s, exploration budgets assigned to the countries of the region amounted to less than US\$ 200 million per year and were basically concentrated in Chile.

The new conditions established for mining investment in Latin America aroused greater interest in exploration in the region during the 1990s, and this was further encouraged by a series of factors, dating back to the second half of the 1980s, affecting exploration expenditures in countries where the large mining companies had previously mostly been operating.

These include higher exploration costs in the United States and Canada, due to new environmental requirements in both these countries and the cancellation of fiscal incentives in Canada; and the depletion of reserves in certain mining zones. Similar reasons also led Australian companies to step up operations outside their own borders, as did the new possibilities opened up by technological advances in copper and gold mining, and the latter's high operating costs in traditional areas such as South Africa.

Annual exploration budgets in Latin America had grown to a total of US\$ 544 million by 1994, and by 1997 the figure had shot up to US\$ 1.17 billion. In that year, Latin America managed to capture 29% of total planned exploration expenditure by the main mining companies worldwide, estimated at US\$ 4.03 billion. The sustained decline in the prices of the main metals, however, and the financial crises in Southeast Asia, caused exploration budgets for 1998 to be cut by US\$ 1.2 billion; about 50% of this reduction is explained by retrenchment by junior companies, which had previously contributed five years of strong growth.

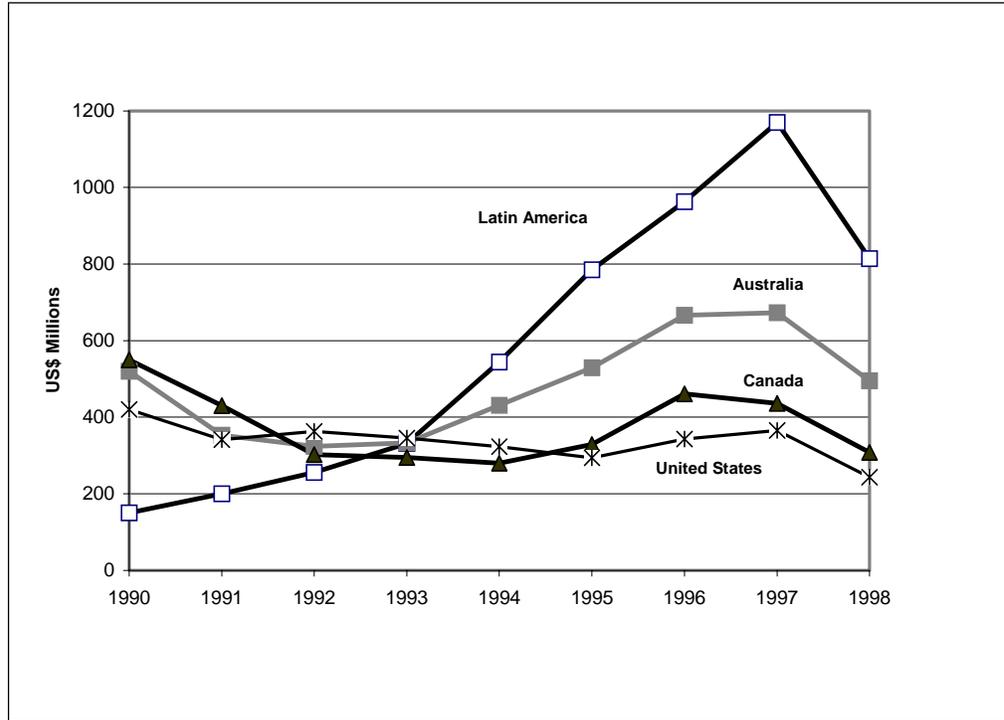
The largest relative cutbacks in exploration budgets occurred in the Southeast Asia/Pacific region and in the United States (39.7% and 33.4% respectively); Latin America, however, is expected to receive a similar percentage to previous years, around 29% of the total amount budgeted worldwide.

Budgets assigned to gold exploration worldwide have fallen dramatically by over US\$1 billion compared to 1997, in the wake of low gold prices and cost containment measures subsequently implemented by the industry; this decline explains nearly all the overall budget reduction. Basic metal exploration decreased by nearly US\$ 70 million.

Exploration choices, regarding the type of mineral that firms look for, show similar trends in Latin America to those seen worldwide. Of total exploration budgets in the region, estimated at US\$ 814 million per year in 1998 (US\$ 356 million less than in 1997), 55% was directed to gold prospecting and 40% to basic metals exploration, particularly copper; the equivalent figures worldwide were 55% and 34% respectively. The balance, at the world level, is mainly accounted for by exploration for diamonds and bituminous minerals, which are not mined in Latin America. Of the approximately US\$ 934 million assigned worldwide to basic metals exploration in 1998, 59% was for the exploration of copper mines and the remaining 40% was divided equally between zinc and nickel.

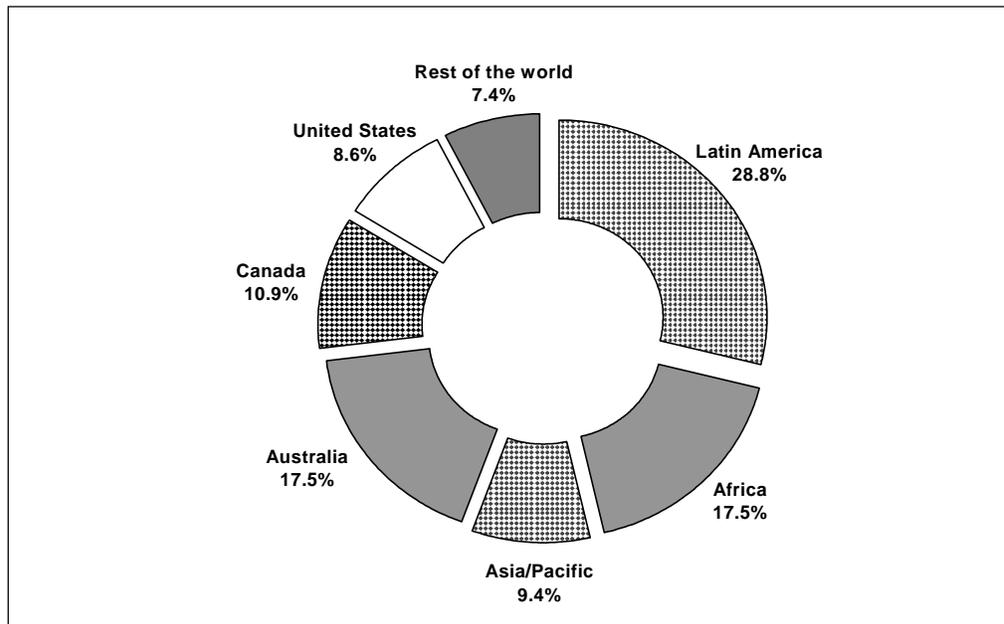
the sample used by this organization is quite reliable, and total investments actually materialised are likely to be close to the figures reported in this survey. The figures have actually been taken from Mining Journal and the Financial Times, which reproduce them in their editions at the beginning of the first and second half of each year.

Figure 14
WORLDWIDE EXPLORATION BUDGETS, 1998



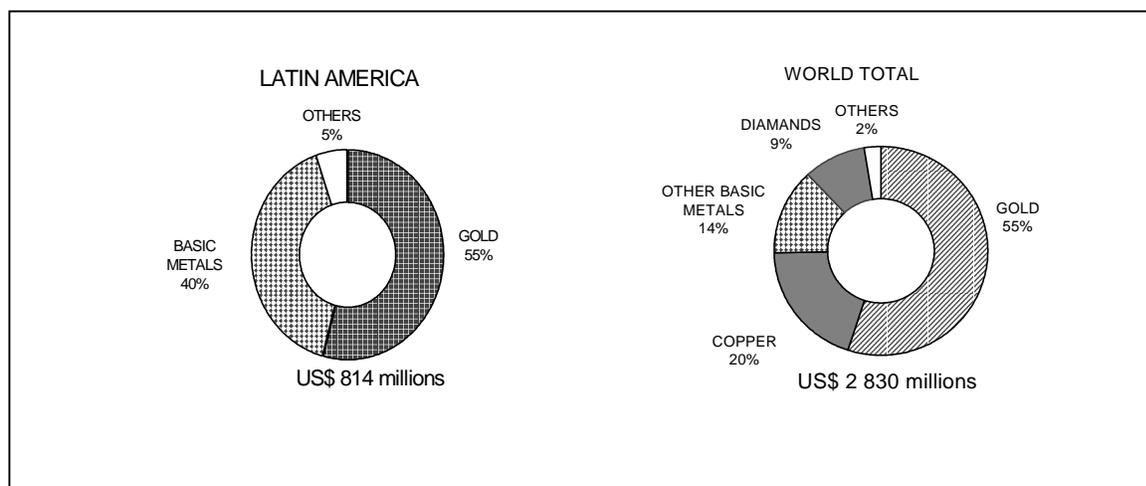
Source: ECLAC, based on Metals Economics Group

Figure 15
WORLDWIDE DISTRIBUTION OF THE EXPLORATION BUDGETS, 1998



Source: ECLAC, based on Metals Economics Group

Figure 16
EXPLORATION BUDGETS, 1998



Source: ECLAC, based on Metals Economics Group

Exploration choices depend on a variety of factors, but for the purposes of this study it is interesting to highlight the correlation between technological change and the availability of resources in the countries of the region. This can be clearly seen in the case of gold where new leaching techniques have facilitated the working of disseminated deposits. This represents a new departure in the region, as the traditional method has been to explore seams and alluvial deposits.

In copper mining, companies search for large ore bodies, with access facilities and infrastructure, that are exploitable at low-cost. In 1998, the worldwide exploration budgets of the seven large companies that spent over US\$ 20 million per year on copper exploration totalled US\$ 259 million. The proportion of the budget destined for copper exploration rose from 17% worldwide in 1997 to 19.5% a year later.

The pace of copper exploration worldwide is likely to slow down over the next few years, because of a predicted glut resulting from the expansion of mines already operating, plus new projects coming on stream in Chile. The worst affected country seems likely to be Peru, which has attractive megaprojects in copper that will probably now be postponed for a better opportunity.

In zinc, the most important factor in investment decisions is the metal content of the ores. Australian deposits are the most promising in this regard, followed by those in Peru. The most attractive prospect is Antamina, with reserves of 370 million tons; this is much larger than the best project in Australia, the Century mine, which contains 118 million tons. Among new projects in Peru, Antamina has the best chances of execution in the short run.

In 1998 exploration budgets in the region were cut by more than US\$ 300 million from the previous year's level. In a sample of 93 mining companies carrying out exploration in the region in 1998 (there were 124 in 1997), with an annual budget assigned for this purpose on the order of US\$ 800 million (US\$ 1.17 billion in 1997), the same four countries continue to account for the majority of investor preferences. Of total budgeted expenditure, 22% was assigned to Chile (20% in 1997), 15% to Brazil (17%), 16% to Mexico (16%) and 17% to Peru (15% in 1997). Moreover, four of the 10 countries with the largest exploration budgets in the world are Latin American, namely Chile (4th), Peru (6th), Brazil (8th) and Argentina (9th). Strong competition for exploration funds is anticipated from African countries in future, however, because eight of the next 10 countries in the exploration fund ranking are from that continent, namely Tanzania, Ghana, Zambia, South Africa, Democratic Republic of the Congo, Burkina Faso, Mali and Angola.

The total exploration budget in Chile for 1998, estimated at some US\$ 177 million, was headed by Placer Dome and Barrick Gold, which accounted for 15% and 13% respectively. In Brazil, Companhia Vale do Rio Doce accounts for 37% of a total annual budget of US\$ 122 million; and in Peru, where the exploration budget is less concentrated than elsewhere in the region, the companies Newmont and North absorb 13% and 7% respectively of a total of US\$ 136 million. In Mexico, the estimated annual budget was US\$ 127 million in 1998, of which Grupo México accounted for 23% and Cambior 8%.

Table 4
LATIN AMERICA: EXPLORATION EXPENDITURES
BY COUNTRY, 1998

(96 companies totalling US\$ 796,9 million)

Percentages			
Argentina	9.5	Mexico	16.0
Bolivia	2.6	Nicaragua	2.0
Brazil	15.3	Peru	17.1
Chile	22.2	Venezuela	2.1
Ecuador	1.7	Regional Inv.	2.6
Guyana	2.5	Other countries	4.9

Source: ECLAC, based on Metals Economics Group

New investment policies opened up by amendments to mining legislation in Argentina and Cuba are the latest novelty in mining exploration in the region. In Argentina, metallic mining had been stagnant for several decades, and in Cuba longstanding entry barriers to private investment were finally lifted in the 1990s.

From being a country of little interest to mining companies in the early 1990s, Argentina has seen a radical change in its situation, such that by 1998 it was accounting for 9.5% of the total exploration budget assigned to the region.

Exploration budgets also revived in Canada and Australia in 1994–1997, albeit more slowly than in Latin America. Whereas budgets doubled in the latter region, in Canada they rose from US\$ 280 to US\$ 436 million and in Australia they increased from US\$ 431 to US\$ 673 million. In 1998, however, the trimming of exploration budgets has been similar across the board, with Latin America being cut by 30% and reductions of 29% in Canada and 27% in Australia.

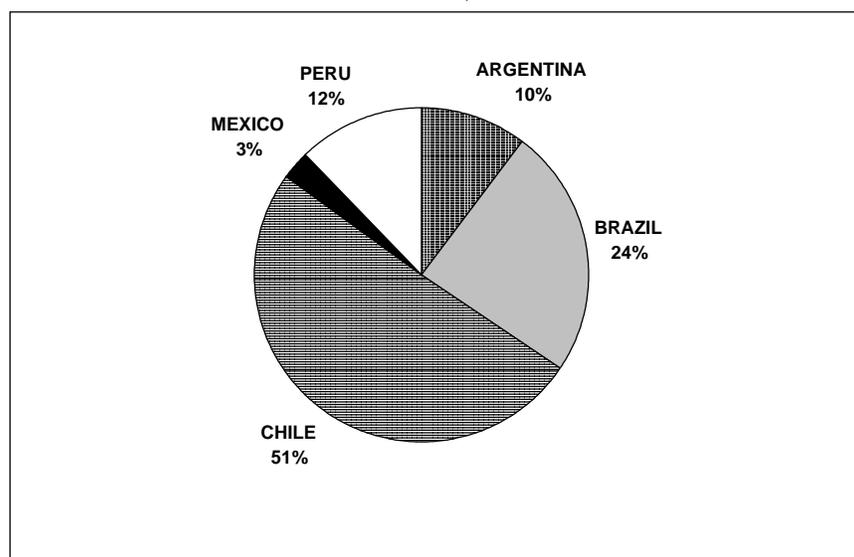
Between 1994 and 1997, exploration budgets in the United States rose from US\$ 323 million to US\$ 365 million, without undergoing any major changes. Momentum picked up in Africa, however, where funds assigned to exploration grew from US\$ 199 to US\$ 663 million –faster growth than in Latin America–. The worldwide budget cutbacks in 1998 also affected the United States (33%) and Africa (25%).

The 1990s as a whole have been a time of great momentum in exploration worldwide. Proof of this is provided by the fact that the average annual exploration budgets of the world's main mining companies increased from an average of US\$ 11.76 per firm in 1991 to US\$ 14.44 million in 1997. In the same lapse of time, exploration budgets worldwide more than doubled from about US\$ 1.8 billion to US\$ 4.03 billion per year. For the reasons mentioned at the beginning of this chapter, however, total planned exploration shrank to US\$ 2.829 billion in 1998, with the company average rising slightly to US\$ 15.5 million.

B. Mining investment executed

As with exploration expenditures, there is also no information on new investment projects in the region during the 1990s. Nonetheless, Argentina, Chile, Brazil, Mexico and Peru provide a fairly representative sample of what has been happening in Latin America as a whole.

Figure 17
MATERIALIZED MINING INVESTMENT 1990–1997
 (Main countries total = US\$17, 379 million)



Source: ECLAC

1. Argentina

In the 1990s, mining investment has been enjoying an unprecedented boom in contrast to the lack of momentum metallic mining had been displaying. This improvement dates from the amendments made to the Mining Code in 1992; until that year, only four foreign companies had been operating in Argentina, whereas now there are 80, together with eight small and medium-size enterprises of local origin.

Total investment accumulated in the period 1992–1997 is put at US\$ 1.788 billion, of which 79% corresponds to the production phase and the remainder to mining exploration. Given that accumulated investment totalled just US\$ 10 million at the start of the period²⁵, growth has been highly significant.

The way investment is distributed is the result of the following projects coming on stream: Bajo de la Alumbrera (gold–copper; investment of US\$ 1.1 billion); Salar del Hombre Muerto (lithium; US\$ 110 million); and Cerro Vanguardia (gold; US\$ 197 million) which is scheduled to come into production in 1998.

Projects expected to come into production over the next five years –representing a total investment of US\$ 1.983 billion– include the copper, molybdenum and gold projects at El Pachón –worth around US\$ 800 million– and Agua Rica with an investment of US\$ 500 million. Other major projects include Potasio Río Colorado (US\$ 150 million) and San Jorge (copper–gold; US\$ 110 million).

²⁵ These figures have been taken from Subsecretaría de Minería, Ministerio de Economía (1997).

Assuming the timetables for projects to come on stream are not altered, investment accumulated in the Argentine mining sector could reach US\$ 3.39 billion by 2002.

2. Brazil

Official figures report a significant amount of mining investment in 1990–1997, although the pace had slackened since the 1980s. Accumulated investment in the sector totalled US\$ 4,208.8 million during the first eight years of the decade, compared to US\$ 9,587.0 million in 1980–1989, while average investment per year was US\$ 526.1 million in the 1990s compared to US\$ 958.7 million in the previous decade.²⁶

Of the accumulated amount reported for 1990–1997, 78% was in production while 22% related to mining exploration. The equivalent figures for the 1980s were 81% and 19% respectively. During the 1990s, the average amount of investment per year in the production stage was US\$ 450 million, versus US\$ 783 million per year in the 1980s.

The largest investment projects coming on stream in the 1990s include iron, aluminium and copper.²⁷ The SAMARCO company doubled its pellet production capacity with an investment of US\$ 250 million, and Vale do Rio Doce entered a US\$ 215 million joint venture in 1995 with Pohang Iron to create Companhia Coreano–Brasileira de Pelotização (KOBRASCO), which has a pellet–making capacity of 4 million tons.

As regards alumina production, operations began in the Alunorte project, in which Vale do Rio Doce has a US\$ 870 million stake. In the copper segment, construction began on the Salobo Metais copper metallurgy project, also involving Vale do Rio Doce, with a total investment that could eventually reach US\$ 1.5 billion. This is expected to produce some 200,000 tons of copper cathodes.

3. Chile

Foreign investment in the mining sector in 1990–1997, carried out under the auspices of Chile's foreign investment statute (D.L. 600), amounted to US\$ 8.806 billion, or 43% of total foreign investment during the period (US\$ 20.399 billion). Average annual mining investment in the period 1990–1997 was US\$ 1.1 billion, compared to just US\$ 311 million in 1974–1989. When investment not covered by D.L. 600 is included, the yearly average for 1990–1997 was probably close to US\$ 1.5 billion.²⁸

Between 1990 and 1997, accumulated investment by the State–owned CODELCO came to US\$ 958 million, compared to US\$ 312 million in 1980–1989. Although the company's investment plan envisages an annual investment target on the order of US\$ 500 million for the period 1998–2002, this is likely to be quite difficult to achieve, given the problems caused by low copper prices.

Large–scale copper projects were carried out between 1975 and 1989 in the midst of an exploration boom driven by economic liberalization and mining reform; all of these projects came on stream during the 1990s, except for Escondida (BHP, UTAH, RTZ and other interests) and Los Bronces (EXXON Minerals), which started production in 1988 and 1989 with investments of US\$ 825 million and US\$ 400 million, respectively.

²⁶ These figures come from Departamento Nacional de Producción Minera (1998). They probably include investments in the industrial processing of mining products, so it is difficult to distinguish effectively what proportion corresponds to mining as such. In the statistics provided, it is possible to identify investments in mining exploration, however.

²⁷ The inventory of projects included in this section has been taken from “Mineração: Investimentos deprimidos e indefinições quanto a recuperação pos–privatização”, preliminary document in press, ECLAC, Brasília, 1998.

²⁸ These figures have been taken from Moguillansky (1998).

Copper megaprojects coming on stream between 1990 and 1997 represent a total investment of US\$ 4.7 billion. These include Candelaria (Phelps Dodge–Sumitomo), Quebrada Blanca (Cominco–Teck); Zaldivar (Outokumpu–Placer Dome), Cerro Colorado (Río Algom) and El Abra (Cyprus–CODELCO). Before the millennium comes to a close the following mines should also start to produce: Collahuasi (Falconbridge–Minorco) with an investment estimated at US\$ 1.4 billion; Radomiro Tomic belonging to CODELCO (US\$ 675 million); Los Pelambres (Luksic–Mitsui, US\$ 1.307 billion) and Lomas Bayas (Westmin, US\$ 246 million). In addition, an expansion is planned for Escondida (oxide plants) with an investment of US\$ 470 million.

The main gold mining projects of the 1990s saw investment of US\$ 865 million in the first eight years of the decade, including la Coipa (Placer Dome–TVX) amounting to US\$ 340 million; Tambo (Barrick Gold; US\$ 140 million); Refugio (Bema Gold–AMAX; US\$ 127 million); Andacollo Oro (Dayton Developments; US\$ 70 million), Fachinal (Coeur D’Alene; US\$ 65 million) and Guanaco (Cyprus–AMAX; US\$ 60 million). It is worth mentioning that the interest currently being shown by large-scale mining investors began in the 1980s when the now exhausted El Indio mine (Barrick Gold) came on stream. El Indio had a major demonstration effect and paved the way for other investors to enter the field, making it possible to discover the broad potential of the El Indio gold-bearing belt. This, in turn, has encouraged new exploration techniques to be applied in Salar de Maricunga, where Refugio (already in production) and the new projects Cerro Casale (Bema Gold–Placer Dome), Pascua (Barrick Gold) and Marte (Teck–Anglo–American) are all located.

4. Mexico

Major investments that came on stream in Mexico in 1992–1997 represented a total investment of US\$ 459.5 million, according to official figures, corresponding to some 18 projects.²⁹

The largest of these, estimated at US\$ 170 million, involved the start of operations at the copper cathode refinery belonging to the Mexicana de Cobre Company, which came on stream in 1997. The company also brought the copper cathode project at the ESDE plant into production 1995, with an investment of US\$ 56 million.

This was followed by two polymetallic projects: Bismark (gold, lead, zinc and copper) belonging to the Peñoles company with an investment of US\$ 61.5 million, which came on stream in 1992; and La Ciénaga (gold, silver and lead) of Minera Mexicana La Ciénaga, which started to produce in 1994, with investment on the order of US\$ 70 million. Smaller investments included those associated with the Tizapa projects (silver, zinc, gold, copper and lead) owned by Minera Tizapa–Peñoles, which came on stream in 1994, with an investment of US\$ 38 million; and San Felipe (gold and silver) with an investment of US\$ 25 million, belonging to Grupo Frisco.

The projects mentioned above represent a total investment of US\$ 420.5 million and account for 92% of investment carried out in projects that began operations between 1992 and 1997. Projections by the Mexican Chamber of Mining for the future indicate an average of about US\$ 347 million per year of investment in expansion and new projects over the period 1998–2000.

5. Peru

Mining investment in Peru picked up significantly in the 1990s, thanks to amendments to legislation that took effect in November 1991. In this country three clearly distinct investment

²⁹ Figures provided by the Dirección de Promoción Minera of the Dirección General de Minas, Ministry of Trade and Industrial Development of Mexico.

processes are taking place, namely an intensification of investment in exploration; privatization and associated investment commitments; and new investment initiatives.³⁰

In the 1990s, the start of the concessions regime set off an exploration boom that produced investment of about US\$ 100 million per year, with the number of active mining petitions increasing from some 100,000 to over 170,000 between 1991 and 1997.

The radical privatization process that took place between 1991 and 1997 provided just over US\$ 1 billion in revenues to the State, and entailed investment commitments amounting to US\$ 1.126 billion; apart from this, additional investment is expected, but not guaranteed, on the order of US\$ 5 billion, relating to expansion and other projects to be carried out by the investors acquiring State companies.

The most important companies privatised were as follows: Hierro-Perú, (Shougang of China) which was sold for US\$ 120 million with an investment commitment of US\$ 150 million; Cerro Verde (Cyprus Minerals; US\$ 37 million/US\$ 485 million); Minera Tintaya (Magma Copper; US\$ 263 million/ US\$ 85 million); Refinería de Cobre de Ilo (Southern Peru; US\$ 66 million/ US\$ 85 million); Refinería de Zinc de Cajamarquilla (over US\$ 190 million/ US\$ 20 million); Complejo Metalúrgico de La Oroya (Doe Run; US\$ 121.5 million/US\$ 120 million); and the Mahr Tunel mine which was sold for US\$ 127 million with an investment commitment amounting to US\$ 60 million.

Apart from these, new projects in other companies, once materialised, would mean an additional US\$ 5 billion in investment over the period 1997–2006. These include the Antamina deposit (Noranda–Inmet–Teck–Rio Algom), which was sold for US\$ 20 million with a US\$ 13 million investment commitment to develop the mine, plus further investment estimated at US\$ 2.2 billion recently agreed with the Peruvian Government. Large-scale copper projects that have suffered delays in their scheduling include La Granja (Cambior) with an expected investment of US\$ 1.3 billion and Quellaveco (Mantos Blancos/Anglo–American) with an investment of US\$ 800 million.

Gold mining projects likely soon to come on stream include Pierina (Barrick Gold), which was bought for US\$ 800 million and has an initial investment of US\$ 200 million.

Investments made by enterprises already operating include those of Southern and Yanacocha. The former began operations in the 1950s and, between 1991 and 1996, invested US\$ 445 million in environmental, productive and equipment-replacement projects in the Tojepala and Cuajone copper mines. The company also has an expansion and modernization program for the Cuajone mine for the period 1997–2007 worth US\$ 1.816 billion. Yanacocha (Newmont–BRGM–Buenaventura), one of the largest gold mines in the American continent, with production of nearly a million ounces per year, began operations in 1993, and by 1996 had made investments totalling around US\$ 147 million.

The new momentum of foreign investment in the Peruvian mining sector compared to earlier decades is clear to see: in the 1960s the only investment carried out was at Cuajone, owned by Southern; in the 1970s, the major investor was the State, while foreign investment retreated; and only investment to have been materialised at the start of the 1990s was Yanacocha.

³⁰ The figures presented in this section have been taken from Campodónico (1997). Other sources include: “Minería peruana, la oportunidad del siglo XXI”, Instituto de Ingenieros de Minas de Perú, Lima, 1997; and “Situación y perspectivas del sector minero”, APOYO S.A., Lima, July 1996.

C. Mining investment projection

There is now some doubt as to whether the expansion of mining investment in Latin America can be maintained at its current pace, in view of the slump in the market, the effects of the Asian crisis (given that many projects were aimed at this market), and difficulties in bringing new megaprojects on stream. Nonetheless, it is interesting to consider investment projections for the period 1999–2007 published in the annual survey by Engineering and Mining Journal.³¹

This publication predicts that mining investment worldwide could amount to US\$ 51.279 billion in the period, which is about 6% up from the previous year's figure. Latin America and the Caribbean are expected to capture 32% of total planned investment, with Asia and Australia absorbing 18% and 10% respectively. North America is also expected to be a major destination capturing 26% of the total (mainly involving considerably higher investment in other minerals such as tar sands and asbestos in Canada and other precious metals in the United States). Africa, meanwhile, is set to receive 11%, with the remainder corresponding to European countries.

The sample covers a total of 116 mining projects worldwide, 17% less than in 1998. Of these only 21% are new projects under construction, while 10% represent new investments for which financing is still being negotiated, and 13% are projects to expand and modernise existing facilities. Of the 116 projects in the sample, 53% relate to investment initiatives in portfolio and the remainder to projects that have been suspended or deferred.

There was considerable uncertainty about future copper investments at the time of carrying out the survey, given that five of the 29 copper projects considered are in the construction phase and five are expansions of mines already in production; three others projects are still seeking finance, one is deferred and 15 projects being held in portfolio. A similar pattern can be seen among the 31 gold mining projects covered in the survey. Of this total, seven are under construction and one corresponds to expansion and modernization; a further seven are awaiting funding and 15 are project proposals held in portfolio.

Of the 116 projects considered in all, 28 are located in Latin America and the Caribbean, which means a projected investment of nearly US\$ 17 billion for the period 1999–2007. Of the projects identified in Latin America, 61% are copper and nearly 18% are gold mining projects, the balance being made up by iron, lead and zinc projects, among others. Investment projections give a total of US\$ 10.992 billion for copper projects and US\$ 1.104 billion for gold mining projects.

Table 5
SHARE OF MAIN METALS IN TOTAL INVESTMENT, 1999–2007
(US\$ million)

Metal	Lat. Am. & the Caribbean	Asia	Africa	Australia / Oceania	Europa	North America	Total
Aluminium	1 500	5 540	1 300	542	209	0	9 091
Copper	10 992	0	1 870	339	628	305	14 134
Ferrous met.	450	500	135	1 188	0	998	3 271
Gold	1 104	2 279	737	16	465	888	5 489
Iron	2 076	0	700	2 234	0	344	5 354
Lead/Zinc	491	160	367	1 012	0	115	2 145
Others	0	550	774	0	11	10 460	11 795
Total	16 613	9 029	5 883	5 331	1 313	13 110	51 279

Source: Intertec/Primedia Publication, Engineering & Mining Journal, January 1999

³¹ The magazine *Engineering and Mining Journal* publishes a survey every year on investment projections for the following decade, considering projects that are already in the execution phase and those that it would be feasible to carry out.

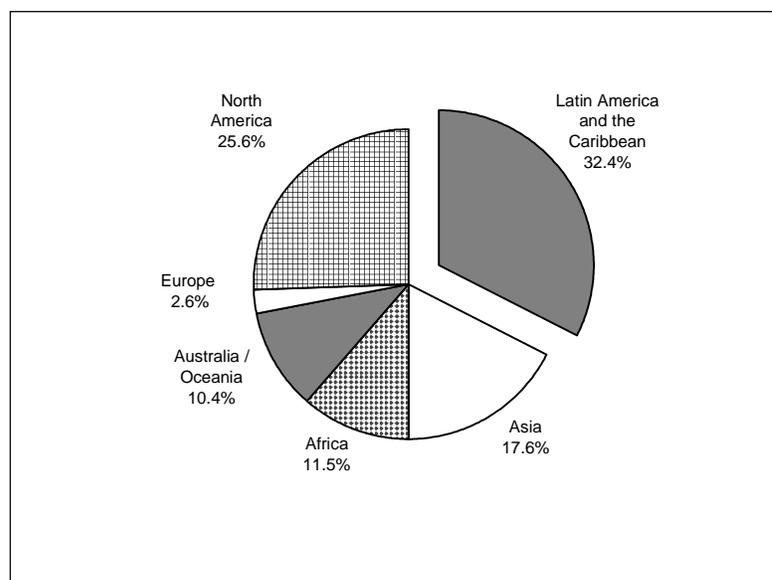
With several large projects coming on stream, Chile is no longer the main destination for copper investments worldwide: in fact only 24% of such projects are in that country, and these account for 35% of the US\$ 10.992 billion in projected copper mining investment in Latin America. Of the total projected for Chile, about US\$ 2.1 billion is absorbed jointly by the Los Pelambres project of Antofagasta Holdings and the Outokumpu smelter. If the investments projected for Chile are fully executed, projects would come on stream between 1999 and 2001, thus completing, early in the new millennium, the dynamic cycle of copper investments the country has been undergoing since the second half of the 1980s.

Of total copper investment projected for the region, 49% is located in Peru, while the rest is taken up by two projects in Panama, one in Argentina and another in Mexico. Of the copper projects in Peru, those most feasible to carry out in a time period similar to that of Chile, is the Cujone expansion (Southern), and Antamina, which is a combined copper–zinc project. The projects at Tambo Grande, La Granja and Toromocho could be undertaken in later years.

Gold mining projects have declined considerably in the wake of shrinking demand and low gold prices; the 1999 survey reports a reduction of slightly over US\$ 3.7 billion worldwide compared to 1998, the greatest losers being the Latin American countries, where projected investment in gold mining is down by US\$ 2.1 billion. Only five gold projects are reported in Latin America and, apparently, several Chilean projects that were in portfolio have been suspended for the time being. Projects that are still current include two in Venezuela: Brisas, of Gold Reserve, for which finance amounting to US\$ 293 million is pending, and Kilómetro 88, in the Placer Dome Las Cristinas mine, worth US\$ 575 million, currently in the construction phase. There is also a project in Cuba, another in Mexico, and the Gross Rosebel project in Suriname.

The two lead–zinc projects in the region involve an expansion of installed capacity at the COMINCO Cajamarquilla zinc refinery, which has a projected investment of US\$ 341 million, and the Industrias Peñoles de México Francisco Madero project with an estimated investment of US\$150 million. The sample predicts these projects could be started by the end of the 1990s.

Figure 18
WORLDWIDE INVESTMENT 1999–2007: GEOGRAPHICAL DISTRIBUTION
(total = US\$ 51, 279 million)

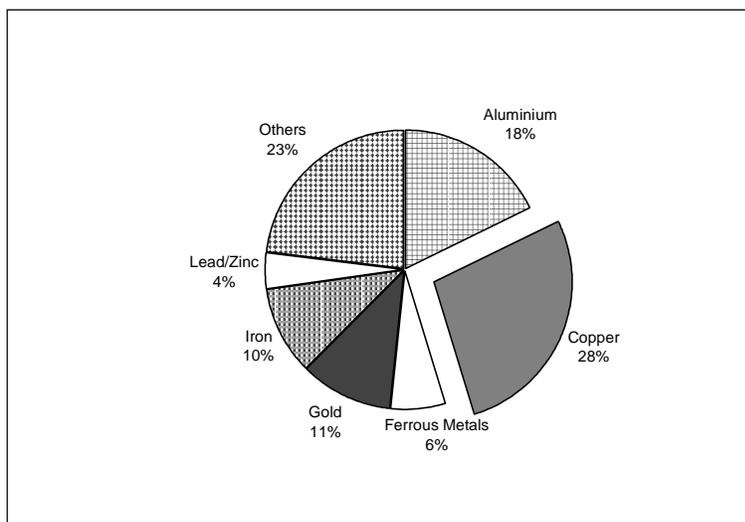


Source: ECLAC, based on Intertek/Primedia Publications, Engineering & Mining Journal, January, 1999

The El Pachón polymetallic project (copper, gold, silver and molybdenum) belonging to Cambior in Argentina, which had previously reported projected investment of US\$ 900 million, is not mentioned in the 1999 survey, so presumably it is deferred and awaiting financing.

The sample reports just one nickel project, belonging to Minorco, located in Venezuela, which is expected to start up in 2000 with an estimated investment of US\$ 450 million. The iron-ore projects in the region considered in the sample are also in Venezuela; these are the BHP and Ferromina projects in the Puerto Audaz area, with investments of US\$ 776 million and US\$ 1.3 billion respectively.

Figure 19
WORLDWIDE INVESTMENT: METAL DISTRIBUTION
(total = US\$ 51,279 million)



Source: ECLAC, based on Intertek/Primedia Publications, Engineering & Mining Journal, January, 1999

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Annex

Annex 1
THE MAIN MINING TAXES

	Corporate Income Taxes	Royalties	VAT	Import Duties	Dividends withholding tax	Interest withholding tax
Argentina	Tax on profits : 35%	Variable rate depending on provincial jurisdiction; maximum mine-head value.	21% Payment of VAT is without cost to the company. In addition there is an accelerated payment regime. Time taken for reimbursement: 60 days.	14% The mining company pay.	NO	15%
Bolivia	Tax on profits: 25% + surtax if taxable income >0 after two deductions: 33% of joint investment and exploitation expenses, 33% of the net value of sales of mining operation (subject to a maximum of US\$ 50 million per operation).	Paid on the value (quoted in London Metal Exchange – the metal content. Gold: if the price/ounce is less than US\$ 700, rate: 7%; (2) between US\$ 700 and US\$ 1000, rate: 1% (3) above US\$ 1000, rate: 4%. Copper: 1%. This tax is supplementary to the tax on profits.	1) VAT: 13%, reimbursable for export companies Time taken for reimbursement: 8 to 10 months. General sales tax (IGV): 3%	5%	12.5%	12.5%
Brazil	Tax on profits: 15% up to R\$ 10 million of net taxable revenues. In excess of this pay a rate of 25%. In addition, an 8% tax paid on profits as “social contribution”	Up to 3% on the net value of sales.	1) Tax on the circulation of goods and services (ICMS): maximum 18%. Cases of reimbursement possible. Time taken for reimbursement: 2 to 24 months. In the sale of equipment (local production): varies from 11% to 20%. Exemption for most mining equipment.	Not charged on most equipment.	NO	15%
Chile	Tax on profits (first category): First category tax: 15%. Set against tax on dividends.	NO	18% – Capital investment entering the country under the foreign investment statute D.L. 600, do not pay VAT on a defined list of capital goods. In addition, the mining company benefits from full reimbursement of VAT paid on goods and services. Delay in receiving reimbursement: 1 month.	10% Exemption for equipment used for producing exportable goods.	General regime: 35%. Fiscal stability regime: 42%. Set against first category tax on profits.	35% Normally reduced to 4% with the express authorization of the Central Bank. Maximum equity/debt ratio: 50%/50%.

	Corporate income tax	Royalties	VAT	Import Duties	Dividends withholding tax	Interest withholding tax
México	<ol style="list-style-type: none"> 1) Tax on profits: 34% of distributed profits. 2) Minimum tax: 1.8% of assets. this tax is only paid if it is greater than the tax on profits. 3) Workers' profit share: 10% of gross profits. 	NO	15% reimbursable for equipment and services used for producing exportable goods, including mining products. Time to receive reimbursement: 50 days.	<ol style="list-style-type: none"> 1) About 10%. Exemptions possible for export-oriented projects. But legislation does not seem to include mining in this benefit. 2) 0% on imports from NAFTA countries. 	34% Not applied to dividends distributed from profits that have already been subject to profits tax.	15%
Perú	<ol style="list-style-type: none"> 1) Mandatory workers' share: 8% of gross profits. 2) Tax on profits: 30% of distributed profits after payment of mandatory worker's share. Undistributed profits may not exceed 80%, and have to finance new investments to raise the level of production by 10%. 3) Tax on assets: 0.2% (complementary to income tax) 	NO	18% VAT paid before the start of production benefits from accelerated reimbursement. VAT paid afterwards constitutes a fiscal credit.	12% Tariffs paid in the stage prior to the start of production benefit from payment broken into 9 half-yearly quotas with 6.5% interest p.a. Possibility of drawback for inputs, raw materials, intermediate products, pieces and parts, used in the production of an exported good.	NO	1% The loan rate may not exceed prime + 6%, LIBOR + 7%. If the rate is greater, 30% is applied on the supplementary amounts.
Venezuela	Tax on profits: from 0 to 2000 UT: 15%; from 2001 to 3000 UT: 22%; 3001 UT and above: 34%. There is also mandatory worker profit-sharing, the amount of which is defined by agreement between workers and the firm, and varies between 15 and 60 days' wages.	Gold: 4% ad valorem (LME); Coal, copper, nickel, zinc, limestone: 7% (minehead value); diamonds: 7% (commercial value).	15.5% Non reimbursable.	NO	NO	NO

Source: ECLAC, based on the Colorado School of Mines op.cit., and official information on the tax regimes of Latin American countries

Annex 2
DEDUCTIONS FROM THE TAX BASE

	Amortization			Other deductions		
	Expenses incurred in prospecting, exploration and feasibility studies.	Machinery and equipment	Development costs	Deductible taxes	Losses carried forward	Other
Argentina	200% of amortization: 100% in the first year of production; 100% amortised during useful life due to depletion of the mineral deposit (depletion allowance), using the "units of depletion method" (exploration and feasibility study expenses x total mineral extracted in the year) / (total initial reserve).	Linear amortization over three years (33.33%)	Amortization over three years: 60% in the first year, 20% in the second, and 20% in the third.	1) Royalties 2) Tax on interest. 3) Payroll taxes. 4) Stamp duties.	Yes, subject to a five-year limit.	1) Operating costs. 2) Interests. 3) Special environmental provision: amount cannot exceed 5% of operating costs.
Bolivia	1) Prospecting and exploration: 100% deductible in the initial year of production 2) Feasibility studies: amortization over 5 years once production commences.	8 years (12.5%) or life of the project (whichever is shorter).	100% deductible in the year in which they are incurred.	1) Tariffs. 2) IGV. 3) Land taxes.	Yes, without limit	1) Operating costs. 2) Interests.
Brazil	1) Prospecting and exploration: from the first year of production: minimum 5 years. 2) Feasibility studies: from the first year of production; minimum 5 years, maximum 10 .	Minimum four years, maximum 10 years, accelerated amortization benefit available subject to certain requirements.	Minimum five years.	1) Royalties. 2) ICMS 3) Taxes for education. 4) Property tax. 5) Land taxes. 6) Payroll taxes. 7) PIS, COFINS, CSL.	Yes, but limited amount: may not exceed 30% of positive taxable income.	1) Operating costs. 2) Interests. 3) depletion of mineral deposit (depletion allowance): rate = (cost of acquiring concessions x total mineral extracted in the year)/(total initial reserve)
Chile	There are three options: 1) 100% in the year in which expenses are incurred, or in the first year of production. 2) Amortization over six years (16.67%). 3) Amortization in two years: 75% in the first year and 25% in the second.	Most heavy machinery benefits from accelerated linear amortizations over three years. Other categories, 10 years.	Linear amortization during one-third of the estimated useful life of the project.	1) Tax on interest. 2) Land taxes. 3) Stamp duties. 4) Payroll taxes.	Yes, without limit.	1) Operating costs. 2) Interests.

	Amortizations			Other deductions		
	Expenses incurred in prospecting, exploration and feasibility studies.	Machinery and equipment	Development costs	Deductible taxes	Losses carried forward	Other
México	There are two options: 1) Linear amortization over 10 years starting in the first year of production, or. 2) 100% deducted in the year in which expenses are incurred.	Between four and 10 years. Motorized vehicles: four years (25%); machinery: 10 years (10%).	There are two options: 1) Linear amortization over 10 years starting in the first year of production. 2) 100% deducted in the year in which expenses are incurred.	1) Tax on interest. 2) Tariffs. 3) Property tax. 4) Land tax. 5) Payroll taxes.	Yes, without limit.	1) Operating costs. 2) Interests. 3) R&D expenses.
Perú	There are two options: 1) 100% deducted in the year in which expenses are incurred or in the first year of production. 2) Amortised as from the year in which they are incurred or the first year of production over a period based on the life cycle of the mine.	If the investment is subject to the fiscal stability regime: five years linear.	There are two options: 1) 100% deducted in the year in which they are incurred. 2) Linear amortization, from the first year of production, over a period based on the estimated life cycle of the mine.	1) Worker profit-shares. 2) Tax on interests. 3) Property tax. 4) Land taxes. 5) Payroll taxes.	Yes, subject to a four-year limit, also covering projects of long gestation.	1) Operating costs. 2) Interests.
Venezuela	1) Feasibility: linear amortization over 10 years. 2) Exploration: linear amortization over five years.	Linear amortization over 10 years.	Linear amortization over 10 years.	1) Royalties. 2) VAT. 3) Land taxes. 4) Stamp duties. 5) Payroll taxes.	Yes, subject to a three-year limit.	1) Operating costs. 2) Interests.

Source: ECLAC, based on the Colorado School of Mines op., and official information on the tax regimes of Latin American countries.



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